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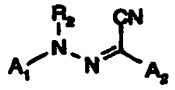

(I)

(57) Abstract

Compounds of formula (I), wherein: A_1 and A_2 each represent independently of one other an aryl or a heteroaryl radical; and A_1 where appropriate is substituted with substituent $(R_{3a})_{n1}$ and A_2 where appropriate with substituent $(R_{3b})_{n2}$; n_1 and n_2 are independently of one another 0, 1, 2, 3 or 4; and either R_{3a} and R_{3b} independently of one another are for example halogen, C_1–C_6alkyl, C_2–C_4alkinyl, halogen–C_1–C_6alkyl, halogen–C_2–C_4alkinyl, C_1–C_6alkoxy, halogen–C_1–C_6alkoxy, C_2–C_6alkenyloxy, C_2–C_6alkinyloxy or halogen–C_2–C_6alkenyloxy; and R_2 is R_{2a}; R_{2a} is for example –C_1–C_6alkyl–$NR_{11}R_{12}$, –COC_9–C_{20}alkyl, –C_1–C_6alkyl–O–C_1–C_6alkyl–O–C_1–C_6alkyl or –$CH_2O(C{=}O)C_1$–C_6alkyl; or, at least one of the radicals R_{3a} or R_{3b} is –$CR_5{=}CR_5R_{14}$, –$NR_{11}R_{12}$, –$C(=O)CN$, –$C(=O)C(=O)O$–C_1–C_6alkyl, –$CR_7{=}NOR_{10}$, or a five or six–membered heteroaryl ring bonded by a carbon atom; R_2 is R_{2a} or R_{2b}, wherein R_{2a} is as defined hereinbefore; and R_{2b} is for example hydrogen, –OH, C_1–C_6alkyl or C_1–C_6alkoxy; R_{14} is for example hydrogen, halogen, C_1–C_6alkyl or halogen–C_1–C_6alkyl; X is O or S; p is 0, 1 or 2; R_5 is independently H or C_1–C_8alkyl; R_6 is for example independently H, C_1–C_8alkyl or C_3–C_6cycloalkyl; R_7 is for example H, C_1–C_8alkyl, C_2–C_8alkenyl or halogen–C_1–C_8alkyl; R_8 is for example C_1–C_8alkyl, C_1–C_8alkenyl or halogen–C_1–C_8alkyl; R_9 is C_1–C_6alkyl, halogen–C_1–C_4alkyl or aryl; R_{10} is H, C_1–C_6alkyl, C_3–C_6cycloalkyl, phenyl or benzyl; R_{11} and R_{12} for example are independently of one another H, C_1–C_6alkyl or phenyl; and where applicable the possible E/Z isomers, E/Z isomer mixtures and/or tautomers thereof, in free form or in agrochemically acceptable form, can be used as agrochemical active ingredients and may be prepared in a known manner.

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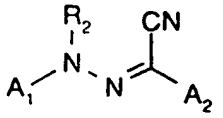
ORGANIC NITRILE DERIVATIVES AND THEIR USE AS PESTICIDES

The invention relates to a compound of formula



(I),

wherein

A_1 and A_2 are independent of one another and in each case represent a monocyclic or bicyclic aryl or heteroaryl radical, and each heteroaryl radical independently of the other having 1 up to and including 4 hetero atoms selected from the group consisting of N, O and S; and

A_1 is substituted where appropriate with substituent $(R_{3a})_{n1}$ and A_2 where appropriate with substituent $(R_{3b})_{n2}$;

n_1 and n_2 are independently of one another 1, 2, 3 or 4, depending on the possibilities for substitution on ring system A_1 and A_2; and <u>either</u>

(A) R_{3a} and R_{3b} independently of one another are hydrogen, halogen, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_2-C_4alkenyl, C_2-C_4alkinyl, halogen-C_2-C_4alkenyl, halogen-C_2-C_4alkinyl, C_1-C_6alkoxy, halogen-C_1-C_6-alkoxy, C_2-C_6alkenyloxy, C_2-C_6alkinyloxy, halogen-C_2-C_6alkenyloxy, halogen-C_2-C_6alkinyloxy, -OH, -SF_5, -CHO, -C(=O)-C_1-C_6-alkyl, -C(=O)-halogen-C_1-C_6alkyl, -C(=O)-OC_1-C_6alkyl, -C(=O)-O-halogen-C_1-C_6alkyl, -O-C(=O)N$(R_6)_2$ (wherein both R_6 substituents are independent of one another), -CN, -NO_2, -$S(=O)_2N(R_6)_2$ (wherein both R_6 substituents are independent of one another), -$S(=O)_p$-C_1-C_6alkyl, -$S(=O)_p$-halogen-C_1-C_6alkyl, -O-$S(=O)_p$-C_1-C_6alkyl, -O-$S(=O)_p$-halogen-C_1-C_6alkyl, phenyl, benzyl, phenoxy or benzyloxy, wherein each of the phenyl, benzyl, phenoxy, or benzyloxy radicals is unsubstituted or substituted in the aromatic ring independently of one another once to five times with substituents selected from the group consisting of halogen, cyano, NO_2, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_1-C_6alkoxy and halogen-C_1-C_6alkoxy; and

R_2 is R_{2a}; <u>or</u>,

(B) R_{3a} and R_{3b} independently of one another as defined under (A) and at least one of the radicals R_{3a} or R_{3b} is -CR_5=CR_5R_{14}, -$NR_{11}R_{12}$, -C(=O)CN, -C(=O)C(=O)O-C_1-C_6alkyl, -CR_{15}=NOR_{10} or a five or six-membered heteroaryl ring, wherein the said heteroaryl ring is substituted, where appropriate, depending on the substitution possibilities on

the ring, with 1 to 3 substituents selected from the group consisting of halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, NO_2 and CN; and

R_2 is R_{2a} or R_{2b}; or

(C) R_{3a} has one of the meanings defined hereinbefore under (A) or (B);

R_{3b} is hydrogen, halogen, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_2-C_4alkenyl, C_2-C_4alkinyl, halogen-C_2-C_4alkenyl, halogen-C_2-C_4alkinyl, C_1-C_6alkoxy, halogen-C_1-C_6alkoxy, C_2-C_6alkenyloxy, C_2-C_6alkinyloxy, halogen-C_2-C_6alkenyloxy, halogen-C_2-C_6alkinyloxy, -OH, $-SF_5$, -CHO, -C(=O)-C_1-C_6alkyl, -C(=O)-halogen-C_1-C_6alkyl, -C(=O)-OC_1-C_6alkyl, -C(=O)-O-halogen-C_1-C_6alkyl, -O-C(=O)N$(R_6)_2$ (wherein the two R_6 substituents are independent of one another), -CN, $-NO_2$, phenyl, benzyl, phenoxy or benzyloxy, wherein each of the phenyl, benzyl, phenoxy, or benzyloxy radicals is unsubstituted or substituted in the aromatic ring independently of one another once to five times with substituents selected from the group consisting of halogen, cyano, NO_2, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_1-C_6alkoxy and halogen-C_1-C_6alkoxy; $-S(=O)_p$-C_1-C_6alkyl in the 4-position or $-S(=O)_p$-halogen-C_1-C_6alkyl in the 4-position, with the proviso, that one of the substituents R_{3b} is $-S(=O)_p$-C_1-C_6alkyl or $-S(=O)_p$-halogen-C_1-C_6alkyl; and

R_2 is R_{2a} or R_{2b};

and in the groups (A), (B) and (C), where appropriate,

R_{2a} is -C_1-C_6alkyl-$NR_{11}R_{12}$, -C(=X)-R_{7a}, -COC_9-C_{20}alkyl, -CH_2O(C=O)C_1-C_6alkyl, -C_1-C_6alkyl-O-C_1-C_6alkyl-O-C_1-C_6alkyl, -CH_2O(C=O)C_2-C_6 alkenyl, -CH_2O(C=O)C_2-C_6alkinyl, -C(=S)OC_2-C_6alkenyl, -C(=S)OC_2-C_6alkinyl, -C(=S)SC_1-C_6alkyl, -C(=S)SC_2-C_6alkenyl, -C(=S)SC_2-C_6alkinyl, -C(=O)SC_1-C_6alkyl, -C(=O)SC_2-C_6alkenyl, -C(=O)SC_2-C_6alkinyl, -C(=S)$NR_{11}R_{12}$, -C(=O)$NR_{10}OR_{13}$, -CH_2OC_2-C_6alkenyl, -CH_2OC_2-C_6alkinyl, -CH_2OC_2-C_6haloalkenyl or -CH_2OC_2-C_6haloalkinyl;

R_{2b} is hydrogen, -OH, C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_6cycloalkyl, C_3-C_6alkenyl, C_3-C_6alkinyl, halogen-C_1-C_6alkyl, halogen-C_3-C_6alkenyl, halogen-C_3-C_6alkinyl, benzyl or benzoyl, wherein the benzyl or benzoyl radical is substituted in the aromatic ring independently of one another once to three times by substituents selected from the group consisting of halogen, -CN, NO_2, C_1-C_6alkyl, C_1-C_6alkoxy, halogen-C_1-C_6alkyl and halogen-C_1-C_6alkoxy; C_1-C_6alkoxy-C_1-C_6alkyl, cyano-C_1-C_6alkyl, -C(=X)-R_{7a}, -C(=X)-R_{7b}, -OC(=O)-R_{7a}, -C(=O)-C(=O)-R_{7a}, -OC(=O)-R_{7b}, -C(=O)-C(=O)-R_{7b}, $-S(=O)_pN(R_6)_2$ (wherein the two R_6 substituents are independent of one another); cyano, -C_1-C_6alkyl-

$N(R_5)$-C(=O)-R_8, -C_1-C_6alkyl-S-C(=S)-R_8, -C_1-C_6alkyl-S(=O)$_p$-R_9, -S(=O)$_p$-R_9, or -CH_2-$N(R_{10})$-SO_2-R_9;

X is O or S;

p is 0, 1 or 2;

R_5 is independently H or C_1-C_8alkyl;

R_6 is independently H, C_1-C_8alkyl, C_3-C_6cycloalkyl, phenyl or benzyl, wherein the phenyl or benzyl group is substituted in the aromatic ring where appropriate independently of one another once to three times with substituents selected from the group consisting of halogen, -CN, NO_2, C_1-C_6alkyl, C_1-C_4alkoxy, halogen-C_1-C_6alkyl and halogen-C_1-C_6alkoxy; or two alkyl radicals R_6, together with the nitrogen atom to which they are bonded, form a five to seven-membered ring, wherein a CH_2 group, where appropriate, is substituted by a heteroatom selected from the group consisting of O and S, or is substituted by NH, and wherein the five to seven-membered ring, where appropriate, is substituted once or twice with C_1-C_4alkyl;

R_{7a} is C_1-C_6alkoxy-C_1-C_6alkyl, $CH_2CH_2CF_2Cl$, C_1-C_6alkylthio-C_1-C_6alkyl, acyloxy-C_1-C_6alkyl, halogen-C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-C_1-C_6alkyl, halogen-C_3-C_6-cycloalkyl-C_1-C_6alkyl, aryloxy-C_1-C_6alkyl; or phenyl, benzyl, phenoxy or aryloxy-C_1-C_6alkyl, which are substituted with 1 to 3 substituents selected form the group consisting of halogen, nitro, cyano, C_1-C_4-alkyl, halogen-C_1-C_4-alkyl and halogen-C_1-C_4-alkoxy;

R_{7b} is H, C_1-C_8alkyl, C_2-C_8alkenyl, halo-C_1-C_8alkyl, halo-C_2-C_8alkenyl, C_1-C_8alkoxy, halo-C_1-C_8alkoxy, C_3-C_6cycloalkyl, phenyl, benzyl, phenoxy, benzyloxy or -$N(R_6)_2$ (in which the two R_6 are independent of one another);

R_8 is C_1-C_8alkyl, C_1-C_8alkoxy, halogen-C_1-C_8alkyl, halogen-C_1-C_8alkoxy, C_1-C_8alkylthio, phenyl, benzyl or -$N(R_6)_2$ (wherein the two R_6 radicals are independent of one another);

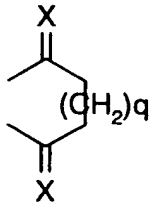
R_9 is C_1-C_6alkyl, halogen-C_1-C_4alkyl or aryl, which is unsubstituted or substituted once to three times, independently of one another, with subsituents selected from the group consisting of C_1-C_6alkyl, C_2-C_4alkenyl, C_2-C_4alkinyl, C_1-C_4alkoxy, halogen, cyano, halogen-C_1-C_4alkyl, halogen-C_2-C_4alkenyl, halogen-C_2-C_4alkinyl, halogen-C_1-C_4alkoxy and nitro;

R_{10} is H, C_1-C_6alkyl, C_3-C_6cycloalkyl, phenyl oder benzyl, wherein the phenyl and benzyl radicals are unsubstituted or substituted in the aromatic ring once to three times independently of one another with substituents selected from the group consisting of

C_1-C_4alkyl, C_1-C_4alkoxy, halogen, cyano, halogen-C_1-C_4alkyl, halogen-C_1-C_4alkoxy and nitro;

R_{11} and R_{12} are independently of one another H, C_1-C_6 alkyl, phenyl, -COC_1-C_6alkyl, -COC_1-C_6haloalkyl, -COphenyl, or together form a five or six-member saturated or unsaturated ring, wherein if appropriate one or more, especially one, of the CH- or CH_2-groups is or are substituted by a heteroatom selected from the group consisting of O, N and S, and wherein the five or six-membered ring if appropriate is independently of each other substituted with 1 to 3 substituents selected from the group consisting of halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4haloalkoxy, NO_2 and CN; or

the two substituents R_{11} and R_{12} together form a ring



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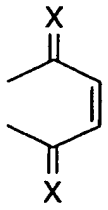


;

q is 2 or 3; and

R_{13} is H, C_1-C_6alkyl, C_2-C_6alkenyl, C_2-C_6alkinyl;

R_{14} is hydrogen, C_1-C_6alkyl, halogen-C_3-C_6alkyl, C_1-C_6alkoxy, halogen-C_1-C_6alkoxy, C_2-C_6alkenyloxy, -CHO, -C(=O)-C_1-C_6alkyl, -C(=O)-halogen-C_1-C_6alkyl, -C(=O)-OC_1-C_6alkyl, -C(=O)-O-halogen-C_1-C_6alkyl, -CN, -NO_2, -$S(=O)_2N(R_6)_2$ (wherein the two R_6 substituents are independent of one another), -$S(=O)_p$-C_1-C_6alkyl, -$S(=O)_p$-halogen-C_1-C_6alkyl, -O-$S(=O)_p$-C_1-C_6alkyl, -O-$S(=O)_p$-halogen-C_1-C_6alkyl, phenyl, benzyl, or benzyloxy wherein each of the phenyl, benzyl, or benzyloxy substituents is unsubstituted or substituted in the aromatic ring independently of one another once to five times with substituents selected from the group consisting of halogen, cyano, NO_2, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_1-C_6alkoxy and halogen-C_1-C_6alkoxy; and

R_{15} is hydrogen, C_1-C_6alkyl or halogen-C_1-C_6alkyl;

and, if appropriate, to the possible E/Z isomers, E/Z isomer mixtures and/or tautomers, in each case in free form or in the form of a salt, to a method for the preparation and use of these compounds, E/Z isomers and tautomers, pesticides, whose active ingredient is selected from these compounds, E/Z isomers and tautomers, and to a method for the preparation and use of these compositions, intermediate products, in free form or in the form of a salt, for the preparation of these compounds, and where appropriate their

tautomers, in free form or in the form of a salt, and to a method for the preparation and use of these intermediate products and their tautomers.

In the literature, certain phenylhydrazone derivatives are proposed as active ingredients in pesticides. The biological properties of these known compounds, however, are not fully satisfactory in the field of pest control, which is why there is a need to produce further compounds with pesticidal properties, especially for the control of insects and members of the order acarina; this problem is solved according to the invention with the development of the present compounds of formula (I).

Some compounds of formula (I) comprise asymmetrical carbon atoms, as a result of which the compounds may occur in an optically active form. Owing to the presence of the C=N double bond, the compounds may occur in E and Z isomeric forms. Atropisomers of the compounds may also occur. Formula (I) should encompass all these possible isomeric forms and mixtures thereof, for example racemates or mixtures of E/Z isomers.

The general terms used hereinbefore and hereinafter have the following meanings, unless defined otherwise.

Groups and compounds containing carbon comprise, unless defined otherwise, in each case 1 to 8 inclusive, preferably 1 to 6 inclusive, more particularly 1 to 4 inclusive, especially 1 or 2, carbon atoms.

Alkyl – as a group per se and as a structural component of other groups and compounds, such as alkyl halide, alkoxy or alkylthio – is, in each case with due consideration to the number of carbon atoms in the group or compound concerned, either straight-chained, i.e. methyl, ethyl, propyl, butyl, pentyl or hexyl, or branched, e.g. isopropyl, isobutyl, sec-butyl, tert-butyl, isopentyl, neopentyl or isohexyl.

Alkenyl – as a group per se and as a structural component of other groups and compounds, such as alkenoxy, alkenyl halide or alkenoxy halide – is, in each case with due consideration to the number of carbon atoms in the group or compound concerned, either straight-chained, e.g. vinyl, 1-methylvinyl, allyl, 1-butenyl oder 2-hexenyl, or branched, such as isopropenyl.

Alkinyl – as a group per se and as a structural component of other groups and compounds, such as alkinyl halide – is, in each case with due consideration to the number of carbon

atoms in the group or compound concerned, either straight-chained, e.g. propargyl, 2-butinyl or 5-hexinyl, or branched, such as 2-ethinylpropyl or 2-propargylisopropyl.

C_3-C_6cycloalkyl is cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl.

Aryl is phenyl or naphthyl, especially phenyl.

Bicyclic heteroaryl is taken to mean a radical which may independently contain one or more heteroatoms only in one ring – such as for example in quinolinyl, quinoxalinyl, indolinyl, benzothiophenyl or benzofuranyl – as well as in both rings – such as for example in pteridinyl or purinyl.

Halogen – as a group per se and as a structural component of other groups and compounds, such as alkyl halide, alkenyl halide and alkinyl halide – is fluorine, chlorine, bromine or iodine, especially fluorine, chlorine or bromine, more especially fluorine or chlorine, and quite particularly chlorine.

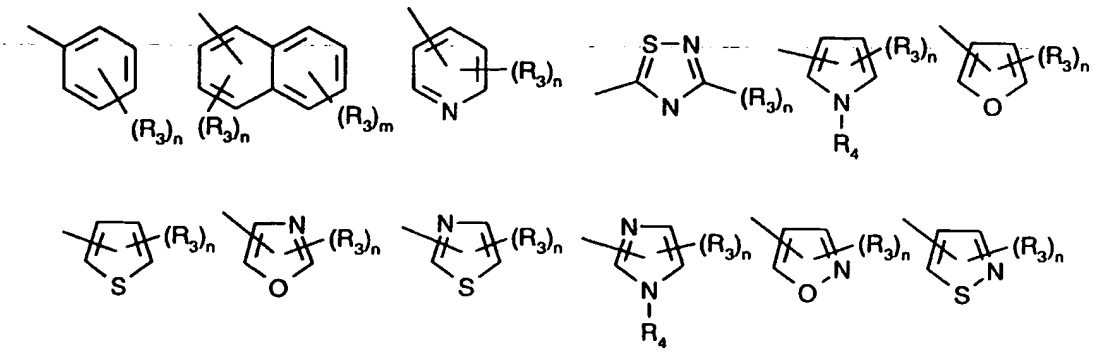
Halogen-substituted groups and compounds containing carbon, such as alkyl halide, alkenyl halide or alkinyl halide, may be partly halogenated or perhalogenated, where in the case of repeated halogenation the halogen substituents may be the same or different. Examples of alkyl halide – as a group per se and as a structural component of other groups and compounds, such as alkenyl halide – are methyl substituted once to three times by fluorine, chlorine and/or bromine, such as CHF_2 or CF_3; ethyl substituted once to five times by fluorine, chlorine and/or bromine, such as CH_2CF_3, CF_2CF_3, CF_2CCl_3, CF_2CHCl_2, CF_2CHF_2, CF_2CFCl_2, CF_2CHBr_2, CF_2CHClF, CF_2CHBrF or $CClFCHClF$; propyl or isopropyl substituted once to seven times by fluorine, chlorine and/or bromine, such as $CH_2CHBrCH_2Br$, CF_2CHFCF_3, $CH_2CF_2CF_3$ or $CH(CF_3)_2$; and butyl or one of the isomers thereof substituted once to nine times by fluorine, chlorine and/or bromine, such as $CF(CF_3)CHFCF_3$ or $CH_2(CF_2)_2CF_3$. Alkenyl halide is for example $CH_2CH{=}CHCl$, $CH_2CH{=}CCl_2$, $CH_2CF{=}CF_2$ or $CH_2CH{=}CHCH_2Br$. Alkinyl halide is for example $CH_2C{\equiv}CF$, $CH_2C{\equiv}CCH_2Cl$ or $CF_2CF_2C{\equiv}CCH_2F$.

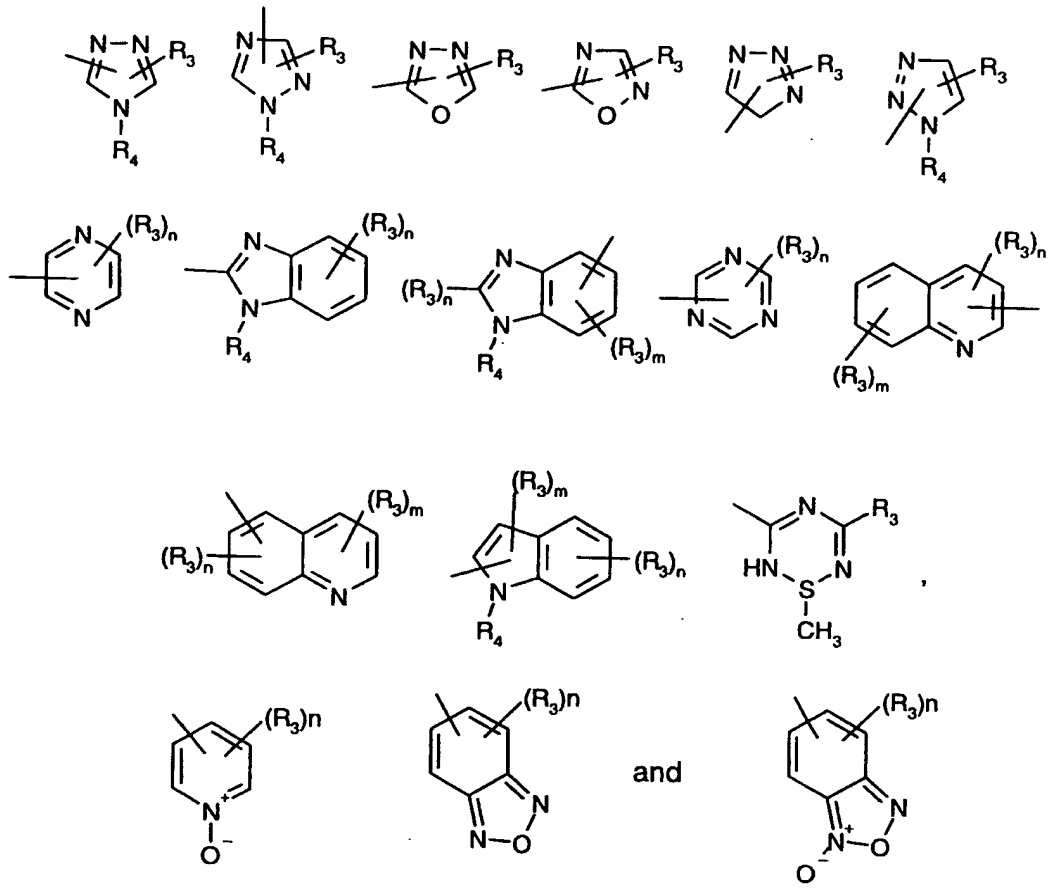
Some compounds of formula (I) may, as is familiar to persons skilled in the art, occur as tautomers, especially if R_2 is H. Accordingly, any reference to compounds of formula (I) hereinbefore and hereinafter is understood to include also their corresponding tautomers, even if the latter are not specifically mentioned in each case.

Compounds of formula (I) which show at least one basic centre may form, for example, acid addition salts. These are formed, for example, with strong inorganic acids, such as mineral acids, e.g. perchloric acid, sulfuric acid, nitric acid, nitrous acid, a phosphoric acid or a hydrogen halide, with strong organic carboxylic acids, such as C_1-C_4alkanecarboxylic acids substituted if appropriate by halogen, e.g. acetic acid, such as dicarboxylic acids unsaturated if appropriate, e.g. oxalic, malonic, succinic, maleic, fumaric or phthalic acid, such as hydroxycarboxylic acids, e.g. ascorbic, lactic, malic, tartaric or citric acid, or benzoic acid, or with organic sulfonic acids, typically C_1-C_4alkanesulfonic or arylsulfonic acids substituted where appropriate for example by halogen, e.g. methanesulfonic or p-toluenesulfonic acid. In a broader sense, compounds of formula (I) with at least one acid group can form salts with bases. Suitable salts with bases are for example metal salts, typically alkali or alkaline earth metal salts, e.g. sodium, potassium or magnesium salts, or salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di- or tri-lower alkylamine, e.g. ethyl, diethyl, triethyl or dimethylpropylamine, or a mono-, di- or trihydroxy-lower alkylamine, e.g. mono-, di- or triethanolamine. Corresponding internal salts where appropriate may also be formed. Compounds of formula (I) in free form are hereinbefore and hereinafter taken to imply also their corresponding salts, and the salts where applicable are taken to mean also the free compounds of formula (I). The same applies for tautomeric derivatives of compounds of formula (I) and salts thereof. In each case, the free form is generally preferred.

The following forms are preferred within the scope of this invention:

(1) A compound of formula (I), wherein A_1 and A_2 are independently of one another a substituent selected from the group consisting of





and

especially phenyl, naphthyl, pyridyl or thiadiazolyl, very especially phenyl or pyridyl, in particular phenyl;

R_3 corresponds to R_{3a} and R_{3b} of formula (I);

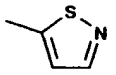
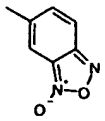
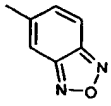
R_{3a} and R_{3b} are independently of one another halogen, -CN, NO_2, halogen-C_1-C_2alkyl, C_1-C_2alkoxy or halogen-C_1-C_2alkoxy, halogen-C_2-C_5alkenoxy or halogen-C_2-C_5alkinyloxy; especially chlorine, -CN, CF_3 or OCF_3; wherein, if m + n is greater than 1, the radicals R_{3a} and R_{3b} are independent of one another;

R_4 is H, C_1-C_4alkyl, phenyl or benzyl; especially H and methyl;

n is 0 to 5, especially 1 to 3, depending on the possibility for substitution on the ring system, and the values of n in A_1 are independent of the values of n in A_2;

m is 0 to 4, depending on the possibility for substitution on the ring system, and the values of m in A_1 are independent of the values of m in A_2;

the sum of m + n is 0 to 5; especially 1, 2 or 3;

(2) A compound of formula (I), wherein A_2 corresponds to substituents selected from the group consisting of furanyl, thienyl,  ,  and  , and

R_2 is R_{2a} or R_{2b};

(3) A compound of formula (I), wherein A_1 and A_2 are phenyl;

(4) A compound of formula (I), wherein

R_{2a} is -C_1-C_6alkyl-$NR_{11}R_{12}$, -C(=X)-R_{7a}, -COC_9-C_{20}alkyl, -C_1-C_6alkyl-O-C_1-C_6alkyl-O-C_1-C_6alkyl, -$CH_2O(C=O)C_1$-C_6alkyl, -$CH_2O(C=O)C_2$-C_6 alkenyl, -$CH_2O(C=O)C_2$-C_6alkinyl, -C(=S)OC_2-C_6alkenyl, -C(=S)OC_2-C_6alkinyl, -C(=S)SC_1-C_6alkyl, -C(=S)SC_2-C_6alkenyl, -C(=S)SC_2-C_6alkinyl, -C(=O)SC_1-C_6alkyl, -C(=O)SC_2-C_6alkenyl, -C(=O)SC_2-C_6alkinyl, -C(=S)$NR_{11}R_{12}$, -C(=O)$NR_{10}OR_{13}$, -CH_2OC_2-C_6alkenyl, -CH_2OC_2-C_6alkinyl, -CH_2OC_2-C_6haloalkenyl or -CH_2OC_2-C_6haloalkinyl; especially,

R_{2a} is -CH_2alkyl-$NR_{11}R_{12}$, -COC_9-C_{20}alkyl, -C_1-C_2alkyl-O-C_1-C_2alkyl-O-C_1-C_2alkyl, -$CH_2O(C=O)C_1$-C_2alkyl, -$CH_2O(C=O)C_2$-C_4alkenyl, -$CH_2O(C=O)C_2$-C_4alkinyl, -C(=S)OC_2-C_4alkenyl, -C(=S)OC_2-C_4alkinyl, -C(=S)SC_1-C_2alkyl, -C(=S)SC_2-C_4alkenyl, -C(=S)SC_2-C_4alkinyl, -C(=O)SC_1-C_2alkyl, -C(=O)SC_2-C_4alkenyl, -C(=O)SC_2-C_4alkinyl, C_1-C_4alkylthio-C_1-C_2alkyl, -C(=S)$NR_{11}R_{12}$, -C(=O)$NR_{10}OR_{13}$, -CH_2OC_2-C_4alkenyl, -CH_2OC_2-C_4alkinyl, -CH_2OC_2-C_4haloalkenyl or -CH_2OC_2-C_4haloalkinyl; in particular

R_{2a} is -CH_2alkyl-$NR_{11}R_{12}$, -COC_9-C_{20}alkyl, -C_1-C_2alkyl-O-C_1-C_2alkyl-O-C_1-C_2alkyl, -$CH_2O(C=O)C_1$-C_2alkyl, -C(=O)SC_1-C_2alkyl, -CH_2OC_2-C_4alkenyl, or -CH_2OC_2-C_4alkinyl; in particular

R_{2a} is -$CON(OCH_3)CH_3$, -$C(O)NHCOCH_3$, -$COSC_2H_5$, -$COSCH_3$, -$CH_2OC(O)C(CH_3)_3$, -$CH_2OC_2H_4OCH_3$, -$CH_2OCH_2CH{=}CH_2$, -$CH_2OCH_2C{\equiv}CH$, -$COC_{10}H_{21}$;

(5) A compound of formula (I), wherein

R_{2b} is hydrogen, C_1-C_4alkyl, C_1-C_4alkoxy-C_1-C_4alkyl, -C(=X)-R_{7a}, -C(=O)-C_1-C_4alkyl , -C(=O)-halogen-C_3-C_6alkenyl , -C(=O)-C_3-C_6cycloalkyl , -C(=O)-O-C_1-C_2alkyl, -C(=O)-C(=O)-O-C_1-C_2alkyl, -C(=O)-C(=O)-$N(R_6)_2$, cyano, benzoyl or benzyl, wherein the benzoyl or benzyl radical is substituted in the aromatic ring if necessary, independently of one another, once

to three times with a substituent selected from the group consisting of halogen, -CN, $-NO_2$, trifluoromethoxy and trifluoromethyl; or-C(=O)-$N(R_6)_2$; and

the two R_6 substituents are, independently of one another, H, C_1-C_4alkyl, C_3-C_6cycloalkyl, phenyl or benzyl, wherein the phenyl or benzyl group if necessary, independently of each other, is substituted in the aromatic ring once or twice with substituents selected from the group consisting of halogen, -CN, C_1-C_4alkyl, C_1-C_4alkoxy, halogen-C_1-C_2alkyl and halogen-C_1-C_2alkoxy; or two alkyl radicals R_6 together with the nitrogen atom to which they are attached form a five or six-membered ring, wherein a CH_2-group if necessary is substituted by an O atom or by NH, and wherein the five or six-membered ring is substituted if necessary with methyl; especially

R_{2b} is hydrogen, C_1-C_3alkyl, C_1-C_2alkoxy-C_1-C_2alkyl, -C(=O)-C_1-C_2alkyl , -C(=O)-fluoro-C_4-C_6alkenyl , -C(=O)-cyclopropyl , -C(=O)-O-C_1-C_2alkyl, -C(=O)-C(=O)-O-C_1-C_2alkyl, -C(=O)-C(=O)-$N(R_6)_2$, cyano, benzyl or o-nitrobenzyl; -C(=O)-$N(R_6)_2$; or -C(=O)-C_6H_5, wherein the phenyl ring is likewise substituted once to three times with a substituent selected from the group consisting of halogen, NO_2, trifluoromethoxy and trifluoromethyl; and

the two R_6 radicals are, independently of one another, H, C_1-C_4alkyl, cyclopropyl, phenyl or benzyl, wherein the phenyl or benzyl group, if necessary, independently of one another, is substituted in the aromatic ring once or twice by substituents selected from the group consisting of chlorine, -CN and OCF_3; or two R_6 alkyl radicals together with the nitrogen atom to which they are attached form a six-membered ring and wherein a CH_2-group where applicable is substituted by an O atom or by NCH_3;

(6) A compound of formula (I), wherein A_1 is a pyridyl radical;

(7) A compound of formula (I), wherein

$(R_{3a})_{n1}$ is Cl, Cl_2, Cl_3, -$(CF_3)_2$, Cl-CF_3, NO_2, -CN, Cl_2-NO_2, -OCF_3, -CF_3, Cl-CF_3, Cl_2-CF_3, Cl_2-OCF_3, -Cl_2-F, Cl_2-Br, Cl-CF_3-F, Cl-Br-CH_3, -$(CH_3)_2$-Br, Cl_3-CF_3, Cl_2-F-CF_3, F_2-CF_3-Cl, Cl_2-CN, Cl_2-CF_3, Cl_2-SCF_3, Cl_2-OCF_3, Cl_2-O_2CF_3, Cl_2-SO_2CH_3, Cl_2-OCF_2Br, Cl_2-OCF_2H, Cl_2-C_2F_5, $(NO_2)_2$-CF_3, $(NO_2)_2$-Cl, Cl_2-SO_2CH_3 or Cl_2-OSO_2CF_3; especially

2-Cl, 2,3-Cl_2, 2,4-Cl_2, 2,6-Cl_2, 2,4,6-Cl_3, 3,5-$(CF_3)_2$, 2-Cl-4-CF_3, 2-NO_2, 2-CN, 3-CN, 4-CN, 2,6-Cl_2-4-NO_2, 4-OCF_3, 4-CF_3, 3-CF_3, 2-Cl-4-CF_3, 2-Cl-4-NO_2, 2,6-Cl_2-4-CF_3, 2,6-Cl_2-4-OCF_3, 2,6-Cl_2-4-F, 2,6-Cl_2-4-Br, 2-Cl-4-CF_3-6-F, 2-Cl-4-Br-6-CH_3, 2,6-$(CH_3)_2$-4-Br, 2,3,6-Cl_3-4-CF_3, 2,6-Cl_2-3-F-4-CF_3, 2,3-F_2-4-CF_3-6-Cl, 2,6-Cl_2-4-CN, 2,4-Cl_2-6-CF_3, 2,6-Cl_2-4-SCF_3, 2,6-Cl_2-4-

$SOCF_3$, 2,6-Cl_2-4-SO_2CF_3, 2,6-Cl_2-4-SO_2CH_3, 2,6-Cl_2-4-OCF_2Br, 2,6-Cl_2-4-OCF_2H, 2,6-Cl_2-4-C_2F_5, 2,6-$(NO_2)_2$-4-CF_3, 2,6-$(NO_2)_2$-4-Cl, 2,6-Cl_2-4-OSO_2CH_3, or 2,6-Cl_2-4-OSO_2CF_3; very especially

2,3-Cl_2, 2,4-Cl_2, 2,6-Cl_2, 2,4,6-Cl_3, 3,5-$(CF_3)_2$, 2-Cl-4-CF_3, 2-CN, 3-CN, 4-CN, 2,6-Cl_2-4-NO_2, 4-OCF_3, 4-CF_3, 3-CF_3, 2-Cl-4-CF_3, 2-Cl-4-NO_2, 2,6-Cl_2-4-CF_3, 2,6-Cl_2-4-OCF_3, 2,6-Cl_2-4-F, 2,6-Cl_2-3-F-4-CF_3, 2,3-F_2-4-CF_3-6-Cl, 2,6-Cl_2-4-CN, 2,4-Cl_2-6-CF_3, 2,6-Cl_2-4-SCF_3, 2,6-Cl_2-4-$SOCF_3$, 2,6-Cl_2-4-SO_2CF_3, 2,6-Cl_2-4-C_2F_5, 2,6-$(NO_2)_2$-4-CF_3, 2,6-$(NO_2)_2$-4-Cl, 2,6-Cl_2-4-OSO_2CH_3, or 2,6-Cl_2-4-OSO_2CF_3;

(8) A compound of formula (I), wherein one $(R_{3b})_{n2}$ is -$S(=O)_p$-C_1-C_6alkyl in the 4-position or -$S(=O)_p$-halogen-C_1-C_6alkyl in the 4-position; especially -$S(=O)_p$-C_1-C_3alkyl or -$S(=O)_p$-halogen-C_1-C_3alkyl; more specifically is -$S(=O)_p$-halogen-C_1-C_3alkyl; very especially, wherein n_2 is 1 and R_{3b} is $SOCF_3$, SOC_2F_5, $SOCHF_2$, $SOCF_2Br$, $SOCF_2Cl$, $SOCF_2CF_2Br$, $SOCF_2CF_2Cl$, SCF_3, SC_2F_5, $SCHF_2$, SCF_2Br, SCF_2Cl, SCF_2CF_2Br, SCF_2CF_2Cl, SO_2CF3, $SO_2C_2F_5$, SO_2CHF_2, SO_2CF_2Br, SO_2CF_2Cl, $SO_2CF_2CF_2Br$, $SO_2CF_2CF_2Cl$;

(9) A compound of formula (I), wherein
$(R_{3b})_{n2}$ is -CN, Cl, Cl_2, F, F_2, Br, -NO_2, -$(NO_2)_2$, -NO_2-CF_3, CF_3, -$(CF_3)_2$, -CN-CF_3, Cl-CF_3, F-CN, -Cl-CN, -OCF_3, -Cl-NO_2, -CH_3-NO_2, -OCH_3-NO_2, -C_6H_5, -C_6H_4-F, -C_6H_4-Cl, -C_6H_4-CF_3, -C_6H_4-CF_3, -C_6H_4-NO_2, -C_6H_3-$(CF_3)_2$, -C_6H_3-Cl_2, -C_6H_3-(Cl-F), -F-CN, F-NO_2, Cl-NO_2, Cl-NO_2, -CHO, SCF_3, $SOCF_3$, SO_2CF_3 or -C(=O)CF_3; especially

4-CN, 3-CN, 4-Cl, 3,4-Cl_2, 2,3-Cl_2, 3,5-Cl_2, 2,5-Cl_2, 3,5-F_2, 2,6-F_2, 4-Br, 2-F, 4-NO_2, 2-NO_2-4-CF_3, 3-CF_3, 4-CF_3, 3,5-$(CF_3)_2$, 2-CN-4-CF_3, 2-Cl-4-CF_3, 2-F-4-CN, 3-Cl-4-CN, 4-OCF_3, 3-OCF_3, 4-Cl-3-NO_2, 2-Cl-4-NO_2, 3-CH_3-4-NO_2, 3-OCH_3-4-NO_2, 4-C_6H_5, 4-C_6H_4-4-F, 4-C_6H_4-4-Cl, 4-C_6H_4-4-CF_3, 4-C_6H_4-3-CF_3, 4-C_6H_4-3-NO_2, 4-C_6H_3-(3,5-CF_3)$_2$, 4-C_6H_3-2,4-Cl_2, 4-C_6H_3-3,4-Cl_2, 4-C_6H_3-3,5-Cl_2, 4-C_6H_3-(3-Cl-4-F), 2-F-4-CN, 2-F-4-NO_2, 2-Cl-4-NO_2, 4-Cl-3-NO_2, 4-CHO, 4-SCF_3, 4-$SOCF_3$, 4-SO_2CF_3 or 4-C(=O)CF_3; very especially

4-CN, 3-CN, 4-Cl, 3,4-Cl_2, 2,3-Cl_2, 3,5-Cl_2, 2,5-Cl_2, 3,5-F_2, 2,6-F_2, 2-F, 2-NO_2-4-CF_3, 4-NO_2, 3-CF_3, 4-CF_3, 3,5-$(CF_3)_2$, 2-CN-4-CF_3, 2-Cl-4-CF_3, 2-F-4-CN, 3-Cl-4-CN, 4-OCF_3, 3-OCF_3, 4-Cl-3-NO_2, 2-Cl-4-NO_2, 3-CH_3-4-NO_2, 3-OCH_3-4-NO_2, 4-C_6H_5, 2-F-4-CN, 2-F-4-NO_2, 2-Cl-4-NO_2, 4-Cl-3-NO_2, 4-CHO, 4-SCF_3, 4-$SOCF_3$, 4-SO_2CF_3 or 4-C(=O)CF_3;

(10) A compound of formula (I), wherein R_{2b} is hydrogen;

(11) A compound of formula (I), wherein n_1 is 1, 2, 3 or 4, preferably 2 or 3;

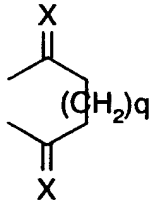
(12) A compound of formula (I), wherein n_2 is 1 or 2, preferably 1;

(13) A compound of formula (I), wherein n_1 is 2, 3, or 4 and n_2 is 1 or 2;

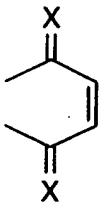
(14) A compound of formula (I), wherein

R_{11} and R_{12} are independently of one another H, C_1-C_2alkyl, phenyl, -COC_1-C_2alkyl, -COphenyl, or together form a five or six-membered saturated or unsaturated ring, wherein one of the CH- or CH_2-groups if applicable is substituted by a heteroatom selected from the group consisting of O, N and S, and wherein the five or six-membered ring if applicable is substituted with 1 or 2 substituents selected from the group consisting of C_1-C_2alkyl, C_1-C_2haloalkyl, NO_2, CN; or

the two substituents R_{11} and R_{12} together form a ring



or



;

and q is 2; especially

R_{11} and R_{12} are independently of one another H, C_1-C_2alkyl, phenyl, -COC_1-C_2alkyl, -COphenyl, very especially H, methyl or ethyl.

(15) A compound of formula (I), wherein

at least one R_{3a} and/or R_{3b} is/are -CR_5=CR_5R_{14} and

R_{14} is hydrogen, C_1-C_6alkyl, halogen-C_1-C_6alkyl, -CHO, -C(=O)-C_1-C_6alkyl, -C(=O)-halogen-C_1-C_6alkyl, -C(=O)-OC_1-C_6alkyl, -C(=O)-O-halogen-C_1-C_6alkyl, -CN, -NO_2, -$S(=O)_2N(R_6)_2$ (wherein the two R_6 substituents are independent of one another), -$S(=O)_p$-C_1-C_6alkyl, phenyl, benzyl or benzyloxy; and

R_5 is hydrogen or C_1-C_2alkyl;

especially an R_{3a} or R_{3b} is -CR_5=CR_5R_{14};

R_{14} is hydrogen, C_1-C_2alkyl, halogen-C_1-C_2alkyl, phenyl or benzyl; and

R_{15} is methyl or CF_3;

(16) A compound of formula (I), wherein R_5 is independently H or C_1C_2alkyl;

(17) A compound of formula (I), wherein

n_2 is 1 and

$(R_{3b})_{n2}$ is SCH_3, SCF_3, SC_2H_5, SC_2F_5, $SOCH_3$, SOC_2H_5, SOC_2F_5, $SO_2N(CH_3)_2$, $SO_2N(C_2H_5)_2$, SO_2CH_3, SO_2CF_3, $SO_2C_2H_5$, $SO_2C_2F_5$, $SOCF_3$, $SOCHF_2$, $SOCF_2Br$, $SOCF_2Cl$, $SOCF_2CF_2Br$, $SOCF_2CF_2Cl$, $SCHF_2$, SCF_2Br, SCF_2Cl, SCF_2CF_2Br, SCF_2CF_2Cl, SO_2CHF_2, SO_2CF_2Br, SO_2CF_2Cl, $SO_2CF_2CF_2Br$ or $SO_2CF_2CF_2Cl$; in particular

SCF_3, SC_2F_5, $SOCF_3$, SOC_2F_5, SO_2CF_3 or $SO_2C_2F_5$; and

R_2 is R_{2a} or R_{2b}, especially H, $-CH_2OC_2H_5$, $-COCH_3$, $-CH_3$, -CN, $-CH_2C{\equiv}CH$, $-C_2H_5$, $-COOCH_3$ or $-CON(CH_3)OCH_3$.

Especially preferred within the scope of this invention are the compounds of formula (I) listed in Tables 3 to 27 and, where applicable, the E/Z isomers and E/Z isomeric mixtures thereof.

A further object of the invention is the method for preparing the compounds of formula (I) and where appropriate their E/Z isomers, E/Z isomeric mixtures, and/or tautomers thereof in each case in free form or in the form of a salt, comprising either

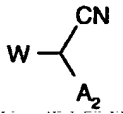
a) for the preparation of a compound of formula (I), wherein the substituents A_1 and A_2 are as defined hereinbefore, and R_2 is hydrogen,

aa) the diazotization of a compound of formula

$$A_1\text{-}NH_2 \quad \text{(III)},$$

wherein A_1 is as defined hereinbefore under formula (I), and

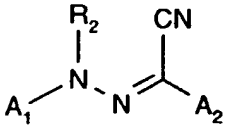
ab) reaction of the diazonium salt with a compound of formula



(IV),

wherein A_2 is as defined hereinbefore under formula (I) and W is hydrogen or a removable group; or

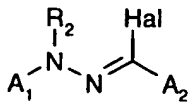
b) for the preparation of a compound of formula



(Ia),

wherein A_1, A_2 and R_2 are as defined hereinbefore for R_{2a} and R_{2b} in the compounds of formula (I),

the reaction of a compound of formula



(II),

wherein A_1, A_2 and R_2 are as defined hereinbefore for R_{2a} and R_{2b} in the compounds of formula (I) and Hal is a halogen atom, preferably chlorine or bromine, especially chlorine, with a metal cyanide, preferably an alkaline metal cyanide, especially with sodium cyanide; or

c) for the preparation of a compound of formula (I), wherein R_2 is different from H, the reaction of a compound of formula (I), wherein R_2 is hydrogen, with a compound of formula

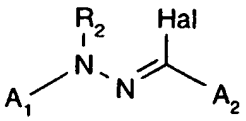
$$R_2\text{-}Q \qquad (V),$$

wherein R_2 is as defined hereinbefore for R_{2a} and R_{2b} in formula (I) and Q is a leaving group, preferably chlorine, bromine or iodine, especially iodine, preferably in the presence of a base; or

and in each case, if so desired, the conversion of a compound of formula (I) or an E/Z isomer or tautomer thereof in free form or in the form of a salt and obtainable by means of the method or by other means to another compound of formula (I) or an E/Z isomer or tautomer thereof in free form or in the form of a salt, the separation of a mixture of E/Z isomers obtainable by means of the method or by other means, and the isolation of the desired isomer, and/or the conversion of a free compound of formula (I) or an E/Z isomer or tautomer thereof, obtainable by means of the method or by other means, to a salt, or the conversion of a salt, obtainable by means of the method or by other means, of a compound of formula (I) or of an E/Z isomer or tautomer thereof to the free compound of formula (I) or an E/Z isomer or tautomer thereof, or to another salt.

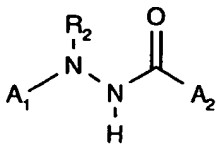
A further object of the invention is a method for the preparation of a compound

d) of formula



(IIa),

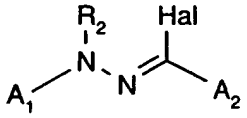
wherein A_1, A_2 and R_2 are as defined hereinbefore for R_{2a} and R_{2b} in the compounds of formula (I) and Hal is a halogen atom, and where applicable the E/Z isomers and tautomers thereof, in free form or in the form of a salt, comprising the reaction of a compound of formula



(VIII),

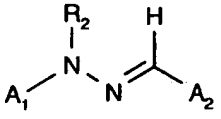
wherein the radicals A_1 and A_2 and R_2 have the same meaning as defined hereinbefore under formula (IIa) for R_{2a} and R_{2b}, with a halogenation agent, or

e) of formula



(IIb),

wherein R_2 and the two radicals A_1 and A_2 have the same meaning as defined hereinbefore for A_1, A_2, R_{2a} and R_{2b} under formula (I) and Hal is a halogen atom, preferably chlorine, comprising the reaction of a compound of formula



(IX),

wherein R_2 and the two radicals A_1 and A_2 have the same meaning as defined hereinbefore under formula (IIb), with N-bromosuccinimide or N-chlorosuccinimide in the presence of a thio ether,

and in each case, if so desired, the conversion of a compound of formula (II) or an E/Z isomer or tautomer thereof in free form or in the form of a salt and obtainable by means of the method or by other means to another compound of formula (II) or an E/Z isomer or tautomer thereof in free form or in the form of a salt, the separation of a mixture of E/Z

isomers obtainable by means of the method or by other means, and the isolation of the desired isomer, and/or the conversion of a free compound of formula (II) or an E/Z isomer or tautomer thereof, obtainable by means of the method or by other means, to a salt, or the conversion of a salt, obtainable by means of the method or by other means, of a compound of formula (II) or of an E/Z isomer or tautomer thereof to the free compound of formula (II) or an E/Z isomer or tautomer thereof, or to another salt.

The reactions described hereinbeore and hereinafter are carried out in known manner, wherein the work may be performed, depending on requirements, with cooling, at room temperature, or with heating, e.g. in a temperature range from about 0°C to the boiling temperature of the reaction medium, preferably from about 20°C to about +120°C, especially at 60°C to 80°C and, if necessary, in a closed container, under pressure and in an inert gas atmosphere, e.g. under nitrogen or argon, and/or under anhydrous conditions. Preferred are reactions carried out at normal pressure under nitrogen. The reaction partners can be reacted with one another as they are, i.e. without the addition of a solvent or diluent, e.g. in the melt. In most cases, however, the addition of an inert solvent or diluent, or a mixture thereof, is of advantage. Especially advantageous reaction conditions are described in the Examples.

The isolation of the products takes place according to usual methods, e.g. by filtration, crystallization, distillation or chromatography or any suitable combination of these methods.

Variant a):

aa) Diazotization takes place under conditions familiar to persons skilled in the art, i.e. in the presence of strong inorganic acids, such as mineral acids, e.g. perchloric acid, sulfuric acid, nitric acid, nitrous acid, a phosphoric acid or a hydrogen halide, usually in the presence of water, but also in pure sulfuric acid.

Depending on the basicity of the aromatic amine, the reaction takes place in a temperature range from about -10°C to about +20°C, or if necessary even at a higher temperature, for example at 60°C to 80°C.

The reaction time is preferably about 1 to about 2 hours.

The product is usually not isolated, but processed further in the next reaction step.

Especially preferred conditions for the reaction are described in Example H6/a.

ab) The reaction usually takes place in the presence of water and preferably in the presence of an organic carboxylic acid, such as formic acid, chloroacetic acid, trifluoroacetic acid, cyanoacetic acid, oxalic, malonic, succinic, maleic, fumaric or phthalic acid; especially preferred is the addition of acetic acid.

A removable group W is taken to mean an electrophilic group which is readily removable under the prevailing reaction conditions. Especially suitable for this are -C(=O)R or -OC(=O)R, wherein R is H, C_1-C_4alkyl, halogen-C_1-C_4alkyl, C_1-C_4alkoxy, halogen-C_1-C_4alkoxy, -CN, or organic sulfonates, such as C_1-C_4alkane or arylsulfonates substituted if necessary for example by halogen, e.g. methane, trifluoromethane or p-toluenesulfonate.

The reaction is advantageously carried out within a temperature range of about -10°C to about +30°C, preferably from about 0°C to about +25°C.

The reaction time of about 0.5 to about 8 hours is preferred, especially about 2 to about 4 hours.

Variant b):

Suitable for the reaction are transition metal cyanides, such as CuCN or $Ni(CN)_2$, as well as alkaline earth and alkaline metal cyanides; especially KCN and NaCN.

Examples of solvents or diluents are: aromatic, aliphatic and alicyclic hydrocarbons and halogenated hydrocarbons, such as benzene, toluene, xylene, mesitylene, tetraline, chlorobenzene, dichlorobenzene, bromobenzene, petroleum ether, hexane, cyclohexane, dichloromethane, chloroform, tetrachloromethane, dichloroethane, trichloroethene or tetrachloroethene; esters, such as ethyl acetate; ethers, such as diethyl ether, dipropyl ether, diisopropyl ether, dibutyl ether, tert-butyl methyl ether, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol dimethyl ether, dimethoxydiethyl ether, tetrahydrofuran or dioxan; ketones, such as acetone, methyl ethyl ketone or methyl isobutyl ketone; alcohols, such as methanol, ethanol, propanol, isopropanol, butanol, ethylene glycol or glycerol; amides, such as N,N-dimethylformamide, N,N diethylformamide, N,N dimethylacetamide, N-methylpyrrolidone or hexamethylphosphoric acid triamide; nitriles, such as acetonitrile or propionitrile; and sulfoxides, such as dimethyl sulfoxide, or water. Preferred are alcohols and water or alcohol / water mixtures.

The reaction is advantageously carried out within a temperature range from about 0°C to about 80°C, preferably from about 20°C to about 30°C, in many cases in the range between room temperature and the reflux temperature of the reaction mixture.

The reaction time of about 0.1 to about 24 hours is preferred, especially about 3 to about 5 hours.

In a preferred form of variant b), a compound of formula (II) is reacted in an ethanol / water mixture with sodium cyanide at room temperature.

Variant c):

Suitable leaving groups Q in compounds of formula (V) are for example hydroxy, C_1-C_8alkoxy, halogen-C_1-C_8alkoxy, C_1-C_8alkanoyloxy, mercapto, C_1-C_8alkylthio, halogen-C_1-C_8alkylthio, C_1-C_8alkanesulfonyloxy, halogen-C_1-C_8alkanesulfonyloxy, benzenesulfonyloxy, toluenesulfonyloxy and halogen, preferably toluenesulfonyloxy, trifluoromethanesulfonyloxy or halogen, especially halogen, in particular bromine or chlorine.

Suitable bases for facilitating the reaction are e.g. alkali metal or alkaline earth metal hydroxides, hydrides, amides, alkanolates, acetates, carbonates, dialkylamides or alkylsilylamides, alkylamines, alkylenediamines, cycloalkylamines (N-alkylated where appropriate and unsaturated where appropriate), basic heterocycles, ammonium hydroxides and carbocyclic amines. Examples are: sodium hydroxide, hydride, amide, methanolate, acetate, and carbonate, potassium tert-butanolate, hydroxide, carbonate, hydride, lithium diisopropylamide, potassium bis(trimethylsilyl)amide, calcium hydride, triethylamine, diisopropylethylamine, triethylenediamine, cyclohexylamine, N-cyclohexyl-N,N-dimethylamine, N,N-diethylaniline, pyridine, 4-(N,N-dimethylamino)pyridine, quinuclidine, N-methylmorpholine, benzyltrimethylammonium hydroxide and 1,5-diazabicyclo[5.4.0]undec-5-ene (DBU). Preferred are alkaline metal and earth alkaline metal carbonates, alkylamines and alkaline metal or earth alkaline metal alkanolates.

Examples of solvents or diluents are: aromatic, aliphatic and alicyclic hydrocarbons, typically benzene, toluene, xylene, mesitylene, tetraline, chlorobenzene, dichlorobenzene, bromobenzene, petroleum ether, hexane, cyclohexane; ethers, such as diethyl ether, dipropyl ether, diisopropyl ether, dibutyl ether, tert-butyl methyl ether, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol dimethylether, dimethoxydiethylether, tetrahydrofuran or dioxan; esters, such as ethyl acetate and methyl acetate; and sulfoxides, such as dimethyl sulfoxide. Preferred are ethers, such as tert-butyl methyl ether, tetrahydrofuran or dioxan, and esters, such as ethyl acetate.

The reaction is advantageously carried out within a temperature range from about 0°C to about +120°C, preferably from about 0°C to about +80°C.

The reaction time of about 0.1 to about 24 hours is preferred, especially about 0.5 to about 2 hours.

Variant d):

The reaction preferably takes place in the presence of an acid catalyst, for example in the presence of a carboxylic acid, such as formic acid, acetic acid, malonic acid or oxalic acid, or also a sulfonic acid, such as C_1-C_4alkane or arylsulfonic acid substituted if necessary for example by halogen, e.g. methane, trifluoromethane or p-toluenesulfonic acid.

Especially suitable are solvents which are suited to azeotropic removal of water. Examples of such solvents or diluents are: aromatic, aliphatic and alicyclic hydrocarbons and halogenated hydrocarbons, such as benzene, toluene, xylene, mesitylene, tetraline, chlorobenzene, dichlorobenzene, bromobenzene, petroleum ether, hexane, cyclohexane, dichloromethane, chloroform, tetrachloromethane, dichloroethane, trichloroethene or tetrachloroethene; esters, such as ethyl acetate; ethers, such as dipropyl ether, diisopropyl ether, dibutyl ether, tert-butyl methyl ether, dimethoxydiethyl ether; ketones, such as methyl isobutyl ketone; alcohols, such as ethanol, propanol, isopropanol, butanol, ethylene glycol or glycerol.

The reaction is advantageously carried out within a temperature range of about 60°C to about 180°C, preferably 80°C to about 130°C, in many cases at the reflux temperature of the reaction medium.

The preferred reaction time is about 6 to about 72 hours, especially about 12 to about 48 hours.

In a preferred form of variant d), the reaction is carried out at 80° C to 140°C in an alcohol or an aromatic hydrocarbon in the presence of C_1-C_4carboxylic acid.

Variant e):

Preferred halogenation agents are Cl_2, Br_2, $SOCl_2$, SO_2Cl_2, $POCl_3$, PCl_3, PCl_5 and $COCl_2$.

Examples of solvents or diluents are: aromatic, aliphatic and alicyclic hydrocarbons and halogenated hydrocarbons, such as benzene, toluene, xylene, mesitylene, tetraline, chlorobenzene, dichlorobenzene, bromobenzene, petroleum ether, hexane, cyclohexane, dichloromethane, chloroform, tetrachloromethane, dichloroethane, trichloroethene or

tetrachloroethene; esters, such as ethyl acetate; ethers, such as diethyl ether, dipropyl ether, diisopropyl ether, dibutyl ether, tert-butyl methyl ether, ethylene glycol dimethyl ether, dimethoxydiethyl ether, tetrahydrofuran or dioxan; ketones, such as acetone, methyl ethyl ketone or methyl isobutyl ketone; amides, such as N,N-dimethylformamide, N,N diethylformamide, N,N-dimethylacetamide, N-methylpyrrolidone or hexamethylphosphoric acid triamide; nitriles, such as acetonitrile or propionitrile.

The reaction is advantageously carried out within a temperature range from about 0°C to about 180°C, preferably from about 50°C to about 100°C, in many cases in the range between room temperature and the reflux temperature of the reaction mixture.

The reaction time is not critical; a reaction time of about 0.1 to about 24 hours is preferred, especially about 3 to about 6 hours.

The compounds of formulae (I), (IIa), (IIb) und (VIII) may be present in the form of one of the possible isomers or as a mixture thereof, depending for example on the number and the absolute and relative configuration of the asymmetric carbon atoms as pure isomers, such as enantiomers and/or diastereomers or isomer mixtures, such as mixtures of enantiomers, for example racemates; the invention relates both to the pure isomers and to all possible isomeric mixtures, and is hereinbefore and hereinafter understood as doing so, even if stereochemical details are not specifically mentioned in every case.

Diastereomer mixtures and racemate mixtures of compounds of formulae (I), (IIa), (IIb) and (VIII), obtainable as described in the method – depending on the starting materials and working procedures selected– or by other means, can, owing to the physicochemical differences of the constituents, be separated in known manner into the pure diastereomers or racemates, for example by fractionated crystallization, distillation and/or chromatography.

The resolution of correspondingly obtainable mixtures of enantiomers, such as racemates, can be achieved by known methods, for example by recrystallization from an optically active solvent, by chromatography on chiral adsorbents, e.g. high-pressure liquid chromatography (HPLC) on acetyl cellulose, by the use of suitable microorganisms, by cleavage with specific immobilized enzymes, through the formation of inclusion compounds, e.g. using chiral crown ether, wherein only one enantiomer is complexed.

According to the invention, apart from isolation of corresponding isomer mixtures, generally known methods of diastereoselective or enantioselective synthesis can also be applied to

obtain pure diastereomers or enantiomers, e.g. by carrying out the method of the invention using educts with correspondingly suitable stereochemistry.

It is of advantage to isolate or synthesize the biologically more active isomer in each case, e.g. enantiomer or mixture of isomers, e.g. enantiomer mixture, if the individual components show differences in biological efficacy.

Compounds of formula (I), (IIa), (IIb) und (VIII) can also be obtained in the form of their hydrates and/or also can include other solvents used for example where necessary for the crystallization of compounds present in solid form.

The invention relates to all those forms of the method, according to which one starts from a compound obtainable as a primary material or an intermediate at any stage of the method and carries out all or some of the missing steps, or uses, or – especially under the reaction conditions – produces a starting material in the form of a derivative or a salt and/or its racemate or enantiomer.

In the method of the present invention, the starting materials and intermediates used are preferably those that lead to the compounds of formula (I) described at the beginning as being especially useful.

The invention relates in particular to the manufacturing processes described in Examples H1, H2, H4 and H5.

Starting materials and intermediate products used according to the invention for the preparation of compounds of formula (I), and in particular the compounds of formulae (II), (III), (IV) and (VIII), which are new, and their use and methods for their preparation likewise form an object of the invention.

Compounds of formulae (IIa), (IIb) and (VIII) as well as the use thereof for the preparation of compounds of formula (I) represent a further object of the invention.

The compounds of formulae (III) to (VI) and (IX) are known or can be prepared according to known methods.

A further object of the invention is a method for controlling pests using a compound of formula (I), wherein A_1, A_2 and R_2 have the same meaning as defined hereinbefore for formula (I).

The compounds of formula (I) according to the invention are active substances of preventive and/or curative merit for use in pest control and offer a very favourable spectrum

of biocidal activity with favourable tolerability in warm-blooded animals, fish, and plants even at low concentrations. The compositions according to the invention are active against all or individual development stages of animal pests showing normal sensitivity, and also of those showing resistance, for example insects or members of the order acarina. The insecticidal, ovicidal, and/or acaricidal effect of the compositions of the invention can manifest itself directly, i.e. killing the pests either immediately or after some time has elapsed, for example when moulting occurs, or the eggs thereof, or indirectly, e.g. reducing the number of eggs laid and/or the hatching rate, good efficacy corresponding to a destruction rate (mortality) of at least 50 to 60%.

The animal pests include for example:

Members of the orders lepidoptera, coleoptera, orthoptera, isoptera, psocoptera, anoplura, mallophaga, thysanoptera, heteroptera, homoptera, hymenoptera, diptera, siphonaptera, thysanura and acarina; especially preferred is the control of pests of the genera and species which are described in EP-A-736'252 , and which are included here by reference.

Pests of said type which occur on plants, especially on crops and ornamentals in agriculture, horticulture and forestry, or on parts of such plants, such as fruits, blooms, leaves, stems, tubers or roots, can be controlled, i.e. kept in check or eradicated, using the active ingredients of the invention, this protection remaining for parts of some plants whose growth does not occur until later.

Target crops within the scope of this application include especially cereals, such as wheat, barley, rye, oats, rice, corn or sorghum; beet, such as sugar beet or fodder beet; fruit, e.g. pomes, drupes and soft fruit, such as apples, pears, plums, peaches, almonds, cherries or berries, e.g. strawberries, raspberries or blackberries; leguminous plants, such as beans, lentils, peas or soybean; oleaginous fruits, such as rape, mustard, poppy, olives, sunflowers, coconut, castor oil plants, cocoa beans or groundnuts; cucumber plants, such as pumpkins, cucumbers or melons; fibrous plants, such as cotton, flax, hemp or jute; citrus fruits, such as oranges, lemons, grapefruit or mandarins; vegetables, such as spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes or paprika; lauraceae, such as avocado, cinnamon or camphor; and tobacco, nuts, coffee, aubergines, sugar cane, tea, pepper, vines, hops, banana plants, natural rubber plants and ornamentals.

The active ingredients of the invention are especially suitable for the control of insects and members of the order acarina, in particular crop-eating and damaging insects, such as

Anthonomus grandis, *Diabrotica balteata*, *Heliothis virescens* larvae, *Plutella xylostella* and *Spodoptera littoralis* larvae, and spider mites, such as *Tetranychus spp.*, in cultivated plants of cotton, fruit, maize, soya, rape and vegetables.

Other indication areas for the active ingredients of the invention are the protection of stored products and stores and of material and, in the hygiene sector, in particular the protection of domestic animals and livestock against pests of said type.

The invention therefore relates also to pesticides which comprise a compound of formula (I), wherein A_1, A_2 and R_2 have the same meaning as defined hereinbefore for formula (I), with the exception of 1-phenylhydrazono-2-nitriloethylbenzene, such as emulsifiable concentrates, suspension concentrates, ready-to-spray or ready-to-dilute solutions, coatable pastes, dilute emulsions, spray powders, soluble powders, dispersible powders, wettable powders, dusts, granulates or encapsulations in polymeric substances (chosen in accordance with the intended objectives and prevailing circumstances), comprising at least one active ingredient of the invention.

In these compositions, the active ingredient is employed in pure form, the solid active ingredients in a specific particle size, or preferably together with – at least – one of the adjuvants conventionally used in the art of formulation, such as extenders, e.g. solvents or solid carriers, or surface-active compounds (surfactants).

Suitable adjuvants, such as solvents, solid carriers, surface-active compounds, non-ionic surfactants, cationic surfactants, and anionic surfactants in the compositions used according to the invention, are the same as those which are described in EP-A-736'252 (CASE 20400) and which are included in the present object of the invention by reference.

As a rule, the compositions comprise 0.1 to 99%, especially 0.1 to 95%, of active ingredient and 1 to 99.9%, especially 5 to 99.9%, of – at least – one solid or liquid adjuvant, wherein 0 to 25%, especially 0.1 to 20%, of the composition may as a rule be surfactant (% in each case meaning percent by weight). Whereas concentrated compositions tend to be preferred for commercial goods, the end consumer as a rule uses dilute compositions which have substantially lower concentrations of active ingredient. Preferred compositions are thus composed in particular as described in EP-A-736'252 .

The activity of the compositions of the invention can be substantially broadened and adapted to prevailing circumstances by adding other insecticidal, acaricidal, and/or

fungicidal substances. Additional active ingredients are, for example, substances from the following classes: organophosphorus compounds, nitrophenols and derivatives, formamidine, urea, carbamates, pyrethroids, chlorinated hydrocarbons and *Bacillus thuringiensis* preparations. The compositions of the invention can also comprise other solid or liquid adjuvants, such as stabilizers, e.g. vegetable oils, epoxidized where appropriate (e.g. epoxidized coconut oil, rapeseed oil or soya oil), antifoams, e.g. silicone oil, preservatives, viscosity modulators, binders and/or tackifiers, and also fertilizers or other active ingredients to achieve specific effects, e.g. acaricides, bactericides, nematocides, molluscicides or selective herbicides.

The compositions of the invention are prepared in a known manner, in the absence of adjuvants, for example, by grinding and/or sieving a solid active ingredient or active ingredient mixture, e.g. to a specific particle size, and in the presence of at least one adjuvant, for example, by intimately mixing and/or grinding the active ingredient or the mixture of active ingredients with the adjuvant(s). These methods for preparing compositions of the invention and the use of compounds of formula (I) for preparing these compositions likewise form an object of the invention.

The methods of application for the compositions, i.e. the methods of controlling pests of said type, such as spraying, atomizing, dusting, coating, dressing, scattering or pouring (chosen in accordance with the intended objectives and prevailing circumstances), and the use of the compositions for controlling pests of said type are further objects of the invention. Typical concentrations of active ingredient are between 0.1 and 1000 ppm, preferably between 0.1 and 500 ppm. The rates of application are generally 1 to 2000 g of active ingredient (a.i.) per hectare (ha = approximately 2.471 acres), especially 10 to 1000 g a.i./ha, and preferably 20 to 600 g a.i./ha.

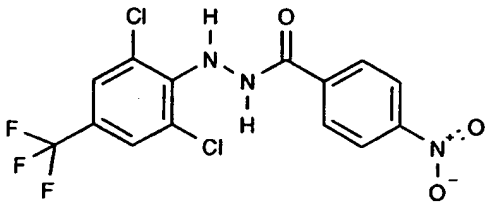
A preferred method of application for crop protection is to apply the active ingredient to the foliage of the plants (leaf application), the number of applications and the rate of application depending on the intensity of infestation by the pest in question. However, the active ingredients can also penetrate the plant through the roots via the soil (systemic action) by impregnating the locus of the plant with a liquid composition, or by applying the compounds in solid form to the soil, e.g. in granular form (soil application). With paddy rice cultures, granules may be metered into the flooded paddy field.

The compositions of the invention are also suitable for protecting plant propagation material, e.g. seeds, such as fruits, tubers or grains, or plant seedlings, from fungal infections and animal pests. The propagation material can be treated with the composition before the start of cultivation, seeds for example being dressed before they are sown. The active ingredients of the invention can also be applied to seeds (coating) by either soaking the seeds in a liquid composition or coating them with a solid composition. The composition can also be given when the propagation material is introduced to the place of cultivation, e.g. when the seeds are sown in the seed furrow. The treatment procedures for plant propagation material and the propagation material thus treated are further objects of the invention.

The invention is illustrated by the following examples. They do not impose any limitation on the invention. Temperatures are given in degrees celsius.

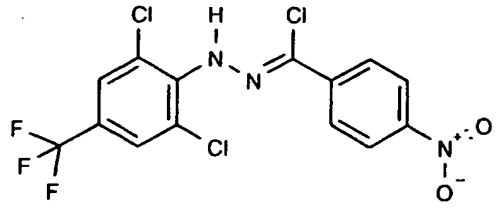
Preparative examples

Example H1: Preparation of 4-nitrobenzoic acid-N'-(2,6-dichloro-4-trifluoromethylphenyl)-hydrazide of formula



A solution of 35.85 g 4-nitrobenzoyl chloride in 150 ml dichloromethane is added dropwise over a period of about 60 minutes to 45.1 g 2,6-dichloro-4-trifluoromethylphenylhydrazine in 1000 ml dichloromethane while stirring at 0 to 5°C, and the stirring is then continued for a further 60 minutes at room temperature. For 20 minutes the mixture is vigorously stirred while 20.4 g triethylamine is fed in. Stirring is then continued for 3 hours at room temperature. The organic phase is washed three times with 500 ml of water each time, dried on sodium sulfate and the solvents removed in the rotary evaporator. After recrystallization of the residue from toluene, the title product is obtained at a melting point of 188–190 °C.

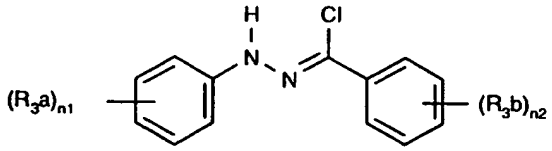
Example H2: Preparation of 4-{1-[(2,6-dichloro-4-trifluoromethylphenyl)hydrazono]-chloromethyl}-nitrobenzene of formula



To a solution of 69.3 g 4-nitrobenzoic acid-N'-(2,6-dichloro-4-trifluoromethylphenyl)-hydrazide in 600 ml toluene, 33.9 g thionyl chloride is added dropwise while stirring at room temperature. The mixture is then heated to 105°C and stirred for 6 hours. After cooling, the mixture is concentrated to dryness by evaporation on the rotary evaporator and the residue crystallized out from toluene. The title compound is obtained at a melting point of 117–118°C (compound 1.20).

Example H3: The other compounds listed in Table 1 can be prepared in a manner analogous to that described under Example H2.

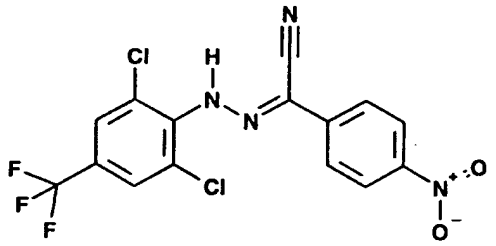
Table 1: Compounds of formula



No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	mp °C
1.1	2,6-Cl_2-4-CF_3	4-Br	124-125
1.2	2,6-Cl_2-4-CF_3	4-$COCF_3$	107-108
1.3	2,6-Cl_2-4-CF_3	3-NO_2-4-Cl	141-143
1.4	2,6-Cl_2-4-CF_3	2-F-4-NO_2	88-90
1.5	2,6-Cl_2-4-CF_3	4-SCF_3	137-138
1.6	2,6-Cl_2-4-CF_3	4-SCH_3	89-90
1.7	2,4-Cl_2-6-CF_3	4-NO_2	128-129
1.8	2-Cl-4-CF_3-6-F	4-NO_2	135-137
1.9	2,6-Cl_2-3-F-4-CF_3	4-NO_2	143-144
1.10	2,3,6-Cl_3-4-CF_3	4-NO_2	121-123
1.11	2,4,6-Cl_3	4-SO_2CH_3	Amorphous
1.12	2,4,6-Cl_3	4-SCH_3	78-79
1.13	2,4,6-Cl_3	4-SCF_3	92-94
1.14	2,6-Cl_2-4-CF_3	4-F	97-98

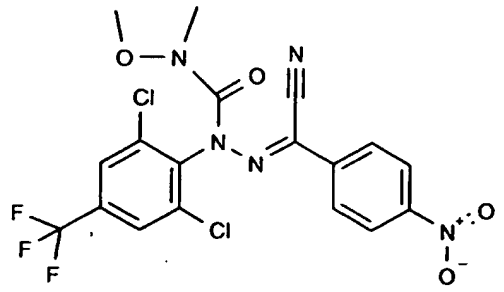
No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	mp °C
1.15	2,6-Cl_2-4-CF_3	4-$SO_2N(CH_3)_2$	163-164
1.16	2,4,6-Cl_3	4-CHO	152-154
1.17	2,6-$(NO_2)_2$-4-CF_3	4-NO_2	189-191
1.18	2-Cl-4-OCF_3-6-NO_2	4-NO_2	147-148
1.19	2-Cl-4-CF_3	3-NO_2-4-Cl	188-190
1.20	2,6-Cl_2-4-CF_3	4-NO_2	117-118

Example H4: Preparation of 4-{1-[(2,6-dichloro-4-trifluoromethylphenyl)hydrazono]-2-nitriloethyl}nitrobenzene of formula



To 10.7 g sodium cyanide in 240 ml water and 160 ml ethanol, 51.5 g solid 4-{1-[(2,6-dichloro-4-trifluoromethylphenyl)hydrazono]chloromethyl}nitrobenzene is added in portions over a period of about one hour. The reaction mixture is stirred for 18 hours at room temperature and then poured onto 6 l of ice water. The precipitate is filtered, washed three times with water, dissolved in ethyl acetate and washed with 15% NaCl solution. The organic phase is dried, filtered over sodium sulfate, and concentrated to dryness by evaporation on the rotary evaporator. The residue is crystallized out from toluene. This yields the title compound with a melting point of 160–161°C.

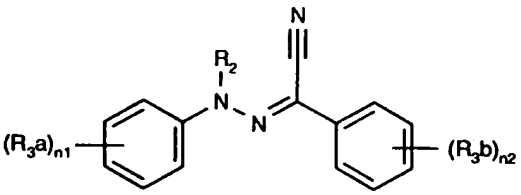
Example H5: Preparation of 4-{1-[(2,6-dichloro-4-trifluoromethylphenyl)-N-methyl-N-methoxycarbamoylhydrazono]-2-nitriloethyl}nitrobenzene of formula



To 1.2 g 4-{1-[(2,6-dichloro-4-trifluoromethylphenyl)hydrazono]-2-nitriloethyl}nitrobenzene in 50 ml tetrahydrofuran, 0.44 g of finely pulverized potassium tert-butylate is added at room temperature. The mixture is stirred for 10 minutes, resulting in a deep red solution. 0.48 g methylmethoxycarbamoyl chloride is added and the mixture stirred for three hours. The solvent is removed in the rotary evaporator and the residue dissolved in ethyl acetate. The ethyl acetate phase is washed with water and NaCl solution, dried over sodium sulfate, and concentrated to dryness by evaporation under a vacuum. The residue is chromatographed over a silica gel column with hexane : tetrahydrofuran in the ratio 5:1. Concentration by evaporation of the fractions 6–14 yields the title compound with a melting point of 96–97°C (compound 2.1).

Example 6: The other compounds listed in Tables 2 and 3 can also be prepared in a manner analogous to that described under Example H5.

Table 2: Compounds of formula



$C_3H_3F_2cyc$ is 2,2-difluoro-cycloprop-1-yl

4-C(NOMe)CF_3 stands for the substituent 4-C(=NOCH$_3$)CF_3

No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.1	2,6-Cl_2-4-CF_3	4-NO_2	-CON(OCH$_3$)CH$_3$	96-97
2.2	2,6-Cl_2-4-CF_3	4-NO_2	-COSC$_2$H$_5$	198-199
2.3	2,6-Cl_2-4-CF_3	4-NO_2	-COSCH$_3$	198-200
2.4	2,6-Cl_2-4-CF_3	4-NO_2	-CH$_2$OC(O)C(CH$_3$)$_3$	87-90

No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.5	2,6-Cl_2-4-CF_3	4-NO_2	-$CH_2OC_2H_4OCH_3$	63-65
2.6	2,6-Cl_2-4-CF_3	4-NO_2	-$CH_2OCH_2CH{=}CH_2$	73-74
2.7	2,6-Cl_2-4-CF_3	4-NO_2	-$CH_2OCH_2C{\equiv}CH$	99-100
2.8	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-H	157-158
2.9	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-H	108-109
2.10	2,6-Cl_2-4-CF_3	4-SCF_3	-H	156
2.11	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$CH_2OC_2H_5$	Oil
2.12	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$CH_2OC_2H_5$	Oil
2.13	2,6-Cl_2-4-CF_3	4-SCH_3	-H	147-149
2.14	2,6-Cl_2-4-CF_3	4-$SO_2N(CH3)_2$	-H	201-202
2.15	2,6-Cl_2-4-CF_3	4-$SO_2N(CH3)_2$	-$CH_2OC_2H_5$	136
2.16	2,6-Cl_2-4-CF_3	4-SCH_3	-$CH_2OC_2H_5$	80-81
2.17	2,6-Cl_2-4-CF_3	4-F	-H	126-128
2.18	2,6-Cl_2-4-CF_3	4-F	-$CH_2OC_2H_5$	Oil
2.19	2,4,6-Cl_3	4-SCF_3	-H	126-127
2.20	2,4,6-Cl_3	4-$SOCF_3$	-H	133-135
2.21	2,4,6-Cl_3	4-SO_2CF_3	-H	146-148
2.22	2,4,6-Cl_3	4-SCH_3	-H	113
2.23	2,4,6-Cl_3	4-SO_2CH_3	-H	205-206
2.24	2,4,6-Cl_3	4-$SOCH_3$	-H	216-217
2.25	2,4,6-Cl_3	4-$SOCF_3$	-$CH_2OC_2H_5$	Oil
2.26	2,4,6-Cl_3	4-SO_2CF_3	-$CH_2OC_2H_5$	86-88
2.27	2,4,6-Cl_3	4-SO_2CH_3	-$CH_2OC_2H_5$	104-105
2.28	2,4,6-Cl_3	4-$SOCH_3$	-$CH_2OC_2H_5$	Oil
2.29	2-Cl-4-OCF_3-6-NO_2	4-NO_2	-H	175-176
2.30	2-Cl-4-OCF_3-6-NO_2	4-NO_2	-CH_3	125-126
2.31	2-Cl-4-OCF_3-6-NO_2	4-NO_2	-$CH_2OC_2H_5$	94-95
2.32	2-Cl-4-OCF_3-6-NO_2	4-NO_2	-$CO_2C_2H_5$	Resin
2.33	2,6-Cl_2-4-CF_3	4-NH2	-$CH_2OC_2H_5$	142-143
2.34	2,6-Cl_2-4-CF_3	4-NO_2	-COC_4H_9 n	149-150
2.35	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH(CH_3)_2$	138-139
2.36	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2C(CH_3)3$	135-136

No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.37	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2C_6H_5$	129-131
2.38	2,6-Cl_2-4-CF_3	4-NO_2	-COC_3H_7 n	142-143
2.39	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2CH_2Cl$	140-142
2.40	2,6-Cl_2-4-CF_3	4-NO_2	-COC_5H_{11} n	144-145
2.41	2,6-Cl_2-4-CF_3	4-NO_2	-$COC_{10}H_{21}$	Oil
2.42	2,6-Cl_2-4-CF_3	4-NO_2	-COC_7H_{15} n	85-86
2.43	2-Cl-4-OCF_3-6-NO_2	4-CN	-H	191-193
2.44	2-Cl-4-OCF_3-6-NO_2	4-CN	-$CH_2OC_2H_5$	60-61
2.45	2-Cl-4-OCF_3-6-NH_2	4-CN	-$CH_2OC_2H_5$	Resin
2.46	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OCH_3$	152-153
2.47	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2C_3H_3F_2$cyc	154-155
2.48	2,6-Cl_2-4-CF_3	4-$NHCOCH_3$	-$CH_2OC_2H_5$	129-130
2.49	2,6-Cl_2-4-CF_3	4-$NHCOCF_3$	-$CH_2OC_2H_5$	155-156
2.50	2,6-Cl_2-4-CF_3	4-N-Pyrrol	-$CH_2OC_2H_5$	104-105
2.51	2-Cl-4-OCF_3-6-$NHCOCH_3$	4-CN	-$CH_2OC_2H_5$	136-137
2.52	2-Cl-4-OCF_3-6-$NHCOCH_3$	4-CN	-$CH_2OC_2H_5$	86-87
2.53	2,6-Cl_2-4-CF_3	4-SC_2F_5	-H	134-135
2.54	2,6-Cl_2-4-CF_3	4-SOC_2F_5	-H	142-143
2.55	2,6-Cl_2-4-CF_3	4-$SO_2C_2F_5$	-H	153-158
2.56	2,6-Cl_2-4-CF_3	4-SOC_2F_5	-$CH_2OC_2H_5$	Resin
2.57	2,6-Cl_2-4-CF_3	4-SOC_2F_5	-$COCH_3$	Resin
2.58	2,6-Cl_2-4-CF_3	4-SOC_2F_5	-CO_2CH_3	Resin
2.59	2,6-Cl_2-4-CF_3	4-SOC_2F_5	-CH_3	Resin
2.60	2,6-Cl_2-4-CF_3	4-$SO_2C_2F_5$	-$CH_2OC_2H_5$	Amorphous
2.61	2,6-Cl_2-4-CF_3	4-$SO_2C_2F_5$	-$COCH_3$	Amorphous
2.62	2,6-Cl_2-4-CF_3	4-$SO_2C_2F_5$	-CH_3	Solid
2.63	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-CN	Resin
2.64	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$CH_2C{\equiv}CH$	Resin
2.65	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-C_2H_5	Resin
2.66	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$COOCH_3$	Resin

No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.67	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$COCH_3$	Amorphous
2.68	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$CON(CH_3)OCH_3$	Resin
2.69	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-CH_3	Amorphous
2.70	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$CON(CH_3)OCH_3$	106-107
2.71	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$COOCH_3$	Amorphous
2.72	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$CH_2C{\equiv}CH$	Resin
2.73	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$COCH_3$	Amorphous
2.74	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-C_2H_5	Resin
2.75	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-CH_3	Resin
2.76	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$CH_2CH_2N(C_2H_5)_2$	amorph
2.77	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$CH_2CH_2N(C_2H_5)_2$	Oel
2.78	2,4,6-Cl_3	4-SO_2CF_3	-$CH_2CH_2N(C_2H_5)_2$	Oel
2.79	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC(O)CH_3$	175-177
2.80	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2SCH_3$	Harz
2.81	2,6-Cl_2-4-CF_3	4-NO_2	-$CO(CH_3)_2OC(O)CH_3$	149-150
2.82	2,4,6-Cl_3	4-SCF_3	-$COCH_2C_3H_3F_2$cyc	97-98
2.83	2,4,6-Cl_3	4-$SOCF_3$	-$COCH_2C_3H_3F_2$cyc	91-93
2.84	2,4,6-Cl_3	4-SO_2CF_3	-$COCH_2C_3H_3F_2$cyc	153-154
2.85	2,6-Cl_2-4-CF_3	4-SCF_3	-$COCH_2C_3H_3F_2$cyc	75-77
2.86	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$COCH_2C_3H_3F_2$cyc	114-115
2.87	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$COCH_2C_3H_3F_2$cyc	154-155
2.88	2-Cl-4-CF_3-6-F	4-NO_2	-$COCH_2C_3H_3F_2$cyc	113-114
2.89	2,6-Cl_2-3-F-4-CF_3	4-NO_2	-$COCH_2C_3H_3F_2$cyc	103-104
2.90	2,4-Cl_2-6-CF_3	4-NO_2	-$COCH_2C_3H_3F_2$cyc	174-175
2.91	2,4,6-Cl_3	4-NO_2	-$COCH_2C_3H_3F_2$cyc	153-154
2.92	2,4,6-Cl_3	4-CN	-$COCH_2C_3H_3F_2$cyc	134-135
2.93	2,6-Cl_2-4-CF_3	3-CH_3-4-NO_2	-$COCH_2C_3H_3F_2$cyc	138-139
2.94	2,6-Cl_2-4-CF_3	4-C(NOMe)CF_3	-$CH_2OC_2H_5$	Harz
2.95	2,6-Cl_2-4-CF_3	4-C(NOMe)CF_3	-H	145-146
2.96	2,4,6-Cl_3	4-C(NOMe)CF_3	-$CH_2OC_2H_5$	92-93
2.97	2,4,6-Cl_3	4-C(NOMe)CF_3	-H	134-135
2.98	2,4,6-Cl_3	4-CH=NOH	-$CH_2OC_2H_5$	Oil

No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.99	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_5$	amorph
2.100	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-4-NO_2	189-192
2.101	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-4-F	amorph
2.102	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-4-Br	146-148
2.103	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-4-CF_3	155-158
2.104	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-3-CF_3	111-114
2.105	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-2-F	harz
2.106	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-3-NO_2	140-143
2.107	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-3-Br	125-128
2.108	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-3-F	112-114
2.109	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-4-Cl	143-147
2.110	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-3-CH_3-4-Cl	163-167
2.111	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2OC_6H_4$-3-Cl,4-F	150-153
2.112	2,6-Cl_2-4-CF_3	4-SON(CH3)$_2$	-H	Harz
2.113	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-CH_2OCH_3	Harz
2.114	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-CH_2OCH_3	Harz
2.115	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$CH(CH_3)_2$	91-92
2.116	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$CH(CH_3)_2$	Harz
2.117	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$CH_2OCH(CH_3)_2$	amorph
2.118	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$CH_2OCH(CH_3)_2$	amorph
2.119	2,6-Cl_2-4-CF_3	4-SCF_2H	H	152-153
2.120	2,6-Cl_2-4-CF_3	4-SCF_2H	-$COCH_3$	110-112
2.121	2,6-Cl_2-4-CF_3	4-$SOCF_2H$	-$COCH_3$	amorph
2.122	2,6-Cl_2-4-CF_3	4-SO_2CF_2H	-$COCH_3$	174-176
2.123	2,6-Cl_2-4-CF_3	4-SCF_2H	-$CH_2OC_2H_5$	91-92
2.124	2,6-Cl_2-4-CF_3	4-$SOCF_2H$	-$CH_2OC_2H_5$	94-96
2.125	2,6-Cl_2-4-CF_3	4-SO_2CF_2H	-$CH_2OC_2H_5$	182-184
2.126	2,4,6-Cl_3	4-$SOCF_3$	-$COCH_3$	amorph
2.127	2,4,6-Cl_3	4-SO_2CF_3	-$COCH_3$	152-154
2.128	2,4,6-Cl_3	4-$SOCF_3$	-$COOCH_3$	181-183
2.129	2,4,6-Cl_3	4-SO_2CF_3	-$COOCH_3$	170-172
2.130	2,4,6-Cl_3	4-$SOCF_3$	-C_2H_5	83-87

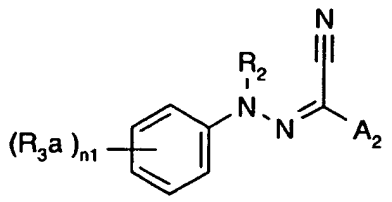
No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.131	2,4,6-Cl_3	4-SO_2CF_3	-C_2H_5	72-74
2.132	2,4,6-Cl_3	4-$SOCF_3$	-CH_3	80-84
2.133	2,4,6-Cl_3	4-SO_2CF_3	-CH_3	120-124
2.134	2,4,6-Cl_3	4-$SOCF_3$	-$CH_2OCH(CH_3)_2$	Harz
2.135	2,4,6-Cl_3	4-$SOCF_3$	-$CH(CH_3)_2$	103-108
2.136	2,4,6-Cl_3	4-SCF_3	-$CH_2OC_2H_5$	84-86
2.137	2,4,6-Cl_3	4-$SCHF_2$	H	113-114
2.138	2,4,6-Cl_3	4-$SOCHF_2$	H	160-161
2.139	2,4,6-Cl_3	4-SO_2CHF_2	H	194-195
2.140	2,4,6-Cl_3	4-$SCHF_2$	-$CH_2OC_2H_5$	Harz
2.141	2,4,6-Cl_3	4-$SOCHF_2$	-$CH_2OC_2H_5$	111-113
2.142	2,4,6-Cl_3	4-SO_2CHF_2	-$CH_2OC_2H_5$	168-169
2.143	2,4,6-Cl_3	4-$SOCHF_2$	-$COCH_3$	146-148
2.144	2,4,6-Cl_3	4-SO_2CHF_2	-$COCH_3$	187-189
2.145	2,4,6-Cl_3	4-$SCHF_2$	-$COCH_3$	97-99
2.146	2,6-Cl_2-4-CF_3	4-SC_2F_5	-CH_3	Oel
2.147	2,6-Cl_2-4-CF_3	4-NO_2	-$COCH_2CH_2CF_2Cl$	189-190
2.148	2,4,6-Cl_3	4-CN	-$COCH_2CH_2CF_2Cl$	167-168
2.149	2,6-Cl_2-4-CF_3	3-CH_3-4-NO_2	-$COCH_2CH_2CF_2Cl$	108-109
2.150	2,4,6-Cl_3	4-NO_2	-$COCH_2CH_2CF_2Cl$	157-158
2.151	2,4-Cl_2-6-CF_3	4-NO_2	-$COCH_2CH_2CF_2Cl$	143-144
2.152	2-Cl-4-CF_3-6-F	4-NO_2	-$COCH_2CH_2CF_2Cl$	152-153
2.153	2,6-Cl_2-3-F-4-CF_3	4-NO_2	-$COCH_2CH_2CF_2Cl$	126-127
2.154	2,6-Cl_2-4-CF_3	4-SCF_3	-$COCH_2CH_2CF_2Cl$	121-122
2.155	2,6-Cl_2-4-CF_3	4-$SOCF_3$	-$COCH_2CH_2CF_2Cl$	129-130
2.156	2,6-Cl_2-4-CF_3	4-SO_2CF_3	-$COCH_2CH_2CF_2Cl$	165-166
2.157	2,3,6-Cl_3-4-CF_3	4-NO_2	-$COCH_2CH_2CF_2Cl$	128-129
2.158	2,4,6-Cl_3	4-SCF_3	-$COCH_2CH_2CF_2Cl$	88-89
2.159	2,4,6-Cl_3	4-$SOCF_3$	-$COCH_2CH_2CF_2Cl$	63-65
2.160	2,4,6-Cl_3	4-SO_2CF_3	-$COCH_2CH_2CF_2Cl$	143-144
2.161	2,4,6-Cl_3	4-SC_2F_5	-H	103-104
2.162	2-Cl-4-CF_3-6-F	4-SC_2F_5	-H	100-101

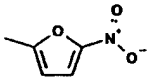
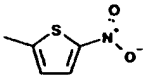
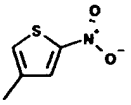
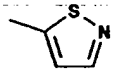
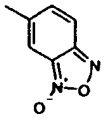
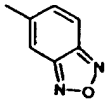
No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.163	2,3,6-Cl_3-4-CF_3	4-SC_2F_5	-H	119-120
2.164	2,6-Cl_2-3-F-4-CF_3	4-SC_2F_5	-H	101-102
2.165	2,6-Cl_2-4-NO_2	4-SC_2F_5	-H	139-140
2.166	2,4-Cl_2-6-CF_3	4-SC_2F_5	-H	93-94
2.167	2,4,6-Cl_3	4-SC_2F_5	-$CH_2OC_2H_5$	Harz
2.168	2,4,6-Cl_3	4-SC_2F_5	-$COOCH_3$	104-105
2.169	2,4,6-Cl_3	4-SC_2F_5	-$COCH_3$	102-103
2.170	2,4,6-Cl_3	4-SC_2F_5	-CH_3	Harz
2.171	2-Cl-4-CF_3-6-F	4-SC_2F_5	-$CH_2OC_2H_5$	Harz
2.172	2-Cl-4-CF_3-6-F	4-SC_2F_5	-$COOCH_3$	80-81
2.173	2-Cl-4-CF_3-6-F	4-SC_2F_5	-$COCH_3$	86-87
2.174	2-Cl-4-CF_3-6-F	4-SC_2F_5	-CH_3	Harz
2.175	2,3,6-Cl_3-4-CF_3	4-SC_2F_5	-$CH_2OC_2H_5$	Harz
2.176	2,3,6-Cl_3-4-CF_3	4-SC_2F_5	-$COOCH_3$	Harz
2.177	2,3,6-Cl_3-4-CF_3	4-SC_2F_5	-$COCH_3$	Harz
2.178	2,3,6-Cl_3-4-CF_3	4-SC_2F_5	-CH_3	Harz
2.179	2,6-Cl_2-3-F-4-CF_3	4-SC_2F_5	-$CH_2OC_2H_5$	Harz
2.180	2,6-Cl_2-3-F-4-CF_3	4-SC_2F_5	-$COOCH_3$	Harz
2.181	2,6-Cl_2-3-F-4-CF_3	4-SC_2F_5	-$COCH_3$	Harz
2.182	2,6-Cl_2-3-F-4-CF_3	4-SC_2F_5	-CH_3	Harz
2.183	2,6-Cl_2-4-NO_2	4-SC_2F_5	-$CH_2OC_2H_5$	Harz
2.184	2,6-Cl_2-4-NO_2	4-SC_2F_5	-$COOCH_3$	Harz
2.185	2,6-Cl_2-4-NO_2	4-SC_2F_5	-$COCH_3$	92-94
2.186	2,6-Cl_2-4-NO_2	4-SC_2F_5	-CH_3	Harz
2.187	2,4,6-Cl_3	4-SOC_2F_5	-$CH_2OC_2H_5$	Harz
2.188	2,4,6-Cl_3	4-$SO_2C_2F_5$	-$CH_2OC_2H_5$	103-104
2.189	2,4-Cl_2-6-CF_3	4-SC_2F_5	-$CH_2OC_2H_5$	Harz
2.190	2,4-Cl_2-6-CF_3	4-SC_2F_5	-$COOCH_3$	Harz
2.191	2,4-Cl_2-6-CF_3	4-SC_2F_5	-$COCH_3$	Harz
2.192	2,4-Cl_2-6-CF_3	4-SC_2F_5	-CH_3	Harz
2.193	2-Cl-4-CF_3-6-F	4-SOC_2F_5	-$CH_2OC_2H_5$	Harz
2.194	2-Cl-4-CF_3-6-F	4-$SO_2C_2F_5$	-$CH_2OC_2H_5$	Harz

No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.195	2,3,6-Cl_3-4-CF_3	4-SOC_2F_5	-$CH_2OC_2H_5$	Harz
2.196	2,3,6-Cl_3-4-CF_3	4-$SO_2C_2F_5$	-$CH_2OC_2H_5$	Harz
2.197	2,6-Cl_2-3-F-4-CF_3	4-SOC_2F_5	-$CH_2OC_2H_5$	Harz
2.198	2,6-Cl_2-3-F-4-CF_3	4-$SO_2C_2F_5$	-$CH_2OC_2H_5$	Harz
2.199	2,6-Cl_2-4-NO_2	4-SOC_2F_5	-$CH_2OC_2H_5$	
2.200	2,6-Cl_2-4-NO_2	4-$SO_2C_2F_5$	-$CH_2OC_2H_5$	
2.201	2,4-Cl_2-6-CF_3	4-SOC_2F_5	-$CH_2OC_2H_5$	Harz
2.202	2,4-Cl_2-6-CF_3	4-$SO_2C_2F_5$	-$CH_2OC_2H_5$	108-110
2.203	2,4,6-Cl_3	4-SOC_2F_5	-$COOCH_3$	Harz
2.204	2,4,6-Cl_3	4-$SO_2C_2F_5$	-$COOCH_3$	131-133
2.205	2-Cl-4-CF_3-6-F	4-SOC_2F_5	-$COOCH_3$	Harz
2.206	2-Cl-4-CF_3-6-F	4-$SO_2C_2F_5$	-$COOCH_3$	Harz
2.207	2,3,6-Cl_3-4-CF_3	4-SOC_2F_5	-$COOCH_3$	Harz
2.208	2,3,6-Cl_3-4-CF_3	4-$SO_2C_2F_5$	-$COOCH_3$	Harz
2.209	2,6-Cl_2-3-F-4-CF_3	4-SOC_2F_5	-$COOCH_3$	
2.210	2,6-Cl_2-3-F-4-CF_3	4-$SO_2C_2F_5$	-$COOCH_3$	
2.211	2,6-Cl_2-4-NO_2	4-SOC_2F_5	-$COOCH_3$	
2.212	2,6-Cl_2-4-NO_2	4-$SO_2C_2F_5$	-$COOCH_3$	
2.213	2,3,6-Cl_3-4-CF_3	4-SOC_2F_5	-$COOCH_3$	
2.214	2,3,6-Cl_3-4-CF_3	4-$SO_2C_2F_5$	-$COOCH_3$	
2.215	2,4,6-Cl_3	4-SOC_2F_5	-$COCH_3$	
2.216	2,4,6-Cl_3	4-$SO_2C_2F_5$	-$COCH_3$	
2.217	2,4,6-Cl_3	4-SCF_2CHFCF_3	-H	
2.218	2,4,6-Cl_3	4-$SOCF_2CHFCF_3$	-H	
2.219	2,4,6-Cl_3	4-$SO_2CF_2CHFCF_3$	-H	
2.220	2,6-Cl_2-4-CF_3	4-SCF_2CHFCF_3	-H	
2.221	2,6-Cl_2-4-CF_3	4-$SOCF_2CHFCF_3$	-H	
2.222	2,6-Cl_2-4-CF_3	4-$SO_2CF_2CHFCF_3$	-H	

No.	$(R_{3a})_{n1}$	$(R_{3b})_{n2}$	R_2	mp (°C)
2.223	2,6-$(NO_2)_2$-4-CF_3	H	-H	180-181
2.224	2,6-$(NO_2)_2$-4-CF_3-5-Cl	H	-H	
2.225	2,6-$(NO_2)_2$	H	-H	
2.226	2,6-$(NO_2)_2$-4-CF_3	4-NO_2	-CH_3	
2.227	2,6-$(NO_2)_2$-4-CF_3-5-Cl	4-NO_2	-$COOCH_3$	
2.228	2,6-$(NO_2)_2$	4-NO_2	-$CH_2OC_2H_5$	
2.229	2,6-$(NO_2)_2$-4-CF_3	4-SCF_3	-CH_3	
2.230	2,6-$(NO_2)_2$-4-CF_3-5-Cl	4-$SOCF_3$	-$COOCH_3$	
2.231	2,6-$(NO_2)_2$	4-SON(CH3)$_2$	-$CH_2OC_2H_5$	
2.232	2,6-$(NO_2)_2$-4-CF_3	4-$SO_2N(CH3)_2$	-$CH_2OCH(CH_3)_2$	
2.233	2,6-$(NO_2)_2$-4-CF_3-5-Cl	4-SCH_3	-$COCH_2C_3H_3F_2$cyc	
2.234	2,6-$(NO_2)_2$	4-F	-$COCH_2OC_6H_4$-4-F	
2.235	2,6-$(NO_2)_2$-4-CF_3	4-Br	-CH_3	
2.236	2,6-$(NO_2)_2$-4-CF_3-5-F	4-$SOCF_3$	-$COOCH_3$	
2.237	2,6-$(NO_2)_2$	4-F	-$CH_2OC_2H_5$	
2.238	2,6-$(NO_2)_2$-4-CF_3	4-Br	-CH_3	
2.239	2,6-$(NO_2)_2$-4-CF_3-5-F	4-$SOCF_3$	-$COOCH_3$	
2.240	2,6-$(NO_2)_2$	4-F	-$CH_2OC_2H_5$	
2.241	2,6-$(NO_2)_2$-4-CF_3	4-Br	-$CH_2OCH(CH_3)_2$	
2.242	2,6-$(NO_2)_2$-4-CF_3-5-Cl	4-$SOCF_3$	-$COCH_2C_3H_3F_2$cyc	
2.243	2,6-$(NO_2)_2$	4-$SOCF_3$	-$COCH_2OC_6H_4$-4-F	

Table 3: Compounds of formula



No.	$(R3a)_{n1}$	A_2	R_2	mp (°C)
3.1	2,6-Cl_2-4-CF_3		-H	
3.2	2,6-Cl_2-4-CF_3		-$CH_2OC_2H_5$	
3.3	2,6-Cl_2-4-CF_3		-H	
3.4	2,6-Cl_2-4-CF_3		-$CH_2OC_2H_5$	
3.5	2,4,6-Cl_3		-H	
3.6	2,4,6-Cl_3		-$CH_2OC_2H_5$	
3.7	2-Cl-4-CF_3		-H	188
3.8	2,6-Cl_2-4-CF_3		-H	169-170
3.9	2,6-Cl_2-4-CF_3		-H	128-132
3.10	2,6-Cl_2-4-CF_3		-H	
3.11	2,6-Cl_2-4-CF_3		-H	152-153
3.12	2,6-Cl_2-4-CF_3		-$COCH_3$	192

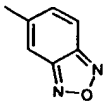
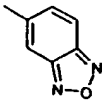
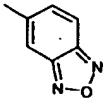
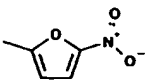
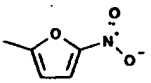
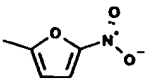
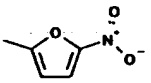
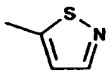
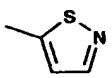
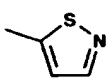
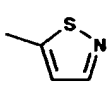
No.	$(R3a)_{n1}$	A_2	R_2	mp (°C)
3.13	2,6-Cl_2-4-CF_3		-CH_3	108
3.14	2,6-Cl_2-4-CF_3		-H	172-173
3.15	2,6-Cl_2-4-CF_3		-$CH_2OC_2H_5$	112
3.16	2,6-$(NO_2)_2$-4-CF_3		-H	
3.17	2,6-$(NO_2)_2$-4-CF_3-5-Cl		-H	
3.18	2,6-$(NO_2)_2$		-H	
3.19	2,6-$(NO_2)_2$-4-CF_3		-CH_3	
3.20	2,6-$(NO_2)_2$-4-CF_3-5-Cl		-CH_3	
3.21	2,6-$(NO_2)_2$		-H	
3.22	2,6-$(NO_2)_2$-4-CF_3		-CH_3	
3.23	2,6-$(NO_2)_2$-4-CF_3-5-Cl		-$COCH_3$	
3.24	2,6-$(NO_2)_2$		-$COCH_2C_3H_3F_2$cyc	
3.25	2,6-$(NO_2)_2$-4-CF_3		H	
3.26	2,6-$(NO_2)_2$-4-CF_3-5-Cl		-CH_3	
3.27	2,6-$(NO_2)_2$		-$COCH_3$	
3.28	2,6-$(NO_2)_2$-4-CF_3		-$COCH_2C_3H_3F_2$cyc	

Table A

	R_2	$(R_{3b})_{n2}$
A.1)	$-CON(OCH_3)CH_3$	4-CN
A.2)	$-CON(OCH_3)CH_3$	$4-NO_2$
A.3)	$-CON(OCH_3)CH_3$	$4-CF_3$
A.4)	$-CON(OCH_3)CH_3$	2-Cl - $4-NO_2$
A.5)	$-CON(OCH_3)CH_3$	$3-CH_3$ - $4-NO_2$
A.6)	$-CON(OCH_3)CH_3$	4-Cl
A.7)	$-CON(OCH_3)CH_3$	$4-C_6H_4-4-NO_2$
A.8)	$-CON(OCH_3)CH_3$	$4-C_6H_4-2-NO_2$
A.9)	$-CON(OCH_3)CH_3$	$4-SCF_3$
A.10)	$-CON(OCH_3)CH_3$	$4-SOCF_3$
A.11)	$-CON(OCH_3)CH_3$	$4-SO_2CF_3$
A.12)	$-CON(OCH_3)CH_3$	2-F-4-CN
A.13)	$-CON(OCH_3)CH_3$	2-F- $4-NO_2$
A.14)	$-CON(OCH_3)CH_3$	$4-COCF_3$
A.15)	$-CON(OCH_3)CH_3$	4-CHO
A.16)	$-CON(OCH_3)CH_3$	$4-Cl-3-NO_2$
A.17)	$-CON(OCH_3)CH_3$	$4-NH_2$
A.18)	$-CON(OCH_3)CH_3$	3-Cl-4-CN
A.19)	$-CON(OCH_3)CH_3$	$3-OCH_3-4-NO_2$
A.20)	$-CON(OCH_3)CH_3$	$3-Cl-4-NO_2$
A.21)	$-CON(OCH_3)CH_3$	$3-F-4-NO_2$
A.22)	$-CON(OCH_3)CH_3$	$4-C_6H_4-4-CN$
A.23)	$-CON(OCH_3)CH_3$	$4-C_6H_4-2-CN$
A.24)	$-C(O)NHOCH_3$	4-CN
A.25)	$-C(O)NHOCH_3$	$4-NO_2$
A.26)	$-C(O)NHOCH_3$	$4-CF_3$
A.27)	$-C(O)NHOCH_3$	2-Cl - $4-NO_2$
A.28)	$-C(O)NHOCH_3$	$3-CH_3$ - $4-NO_2$
A.29)	$-C(O)NHOCH_3$	4-Cl
A.30)	$-C(O)NHOCH_3$	$4-C_6H_4-4-NO_2$

	R_2	$(R_{3b})_{n2}$
A.31)	$-C(O)NHOCH_3$	$4-C_6H_4-2-NO_2$
A.32)	$-C(O)NHOCH_3$	$4-SCF_3$
A.33)	$-C(O)NHOCH_3$	$4-SOCF_3$
A.34)	$-C(O)NHOCH_3$	$4-SO_2CF_3$
A.35)	$-C(O)NHOCH_3$	2-F-4-CN
A.36)	$-C(O)NHOCH_3$	2-F- $4-NO_2$
A.37)	$-C(O)NHOCH_3$	$4-COCF_3$
A.38)	$-C(O)NHOCH_3$	4-CHO
A.39)	$-C(O)NHOCH_3$	4-Cl- $3-NO_2$
A.40)	$-C(O)NHOCH_3$	$4-NH_2$
A.41)	$-C(O)NHOCH_3$	3-Cl-4-CN
A.42)	$-C(O)NHOCH_3$	$3-OCH_3-4-NO_2$
A.43)	$-C(O)NHOCH_3$	$3-Cl-4-NO_2$
A.44)	$-C(O)NHOCH_3$	$3-F-4-NO_2$
A.45)	$-C(O)NHOCH_3$	$4-C_6H_4-4-CN$
A.46)	$-C(O)NHOCH_3$	$4-C_6H_4-2-CN$
A.47)	$-COSC_2H_5$	4-CN
A.48)	$-COSC_2H_5$	$4-NO_2$
A.49)	$-COSC_2H_5$	$4-CF_3$
A.50)	$-COSC_2H_5$	$2-Cl - 4-NO_2$
A.51)	$-COSC_2H_5$	$3-CH_3 - 4-NO_2$
A.52)	$-COSC_2H_5$	4-Cl
A.53)	$-COSC_2H_5$	$4-C_6H_4-4-NO_2$
A.54)	$-COSC_2H_5$	$4-C_6H_4-2-NO_2$
A.55)	$-COSC_2H_5$	$4-SCF_3$
A.56)	$-COSC_2H_5$	$4-SOCF_3$
A.57)	$-COSC_2H_5$	$4-SO_2CF_3$
A.58)	$-COSC_2H_5$	2-F-4-CN
A.59)	$-COSC_2H_5$	2-F- $4-NO_2$
A.60)	$-COSC_2H_5$	$4-COCF_3$
A.61)	$-COSC_2H_5$	4-CHO
A.62)	$-COSC_2H_5$	$4-Cl-3-NO_2$

	R_2	$(R_{3b})_{n2}$
A.63)	$-COSC_2H_5$	$4-NH_2$
A.64)	$-COSC_2H_5$	3-Cl-4-CN
A.65)	$-COSC_2H_5$	$3-OCH_3-4-NO_2$
A.66)	$-COSC_2H_5$	$3-Cl-4-NO_2$
A.67)	$-COSC_2H_5$	$3-F-4-NO_2$
A.68)	$-COSC_2H_5$	$4-C_6H_4-4-CN$
A.69)	$-COSC_2H_5$	$4-C_6H_4-2-CN$
A.70)	$-COSCH_3$	4-CN
A.71)	$-COSCH_3$	$4-NO_2$
A.72)	$-COSCH_3$	$4-CF_3$
A.73)	$-COSCH_3$	$2-Cl - 4-NO_2$
A.74)	$-COSCH_3$	$3-CH_3 - 4-NO_2$
A.75)	$-COSCH_3$	4-Cl
A.76)	$-COSCH_3$	$4-C_6H_4-4-NO_2$
A.77)	$-COSCH_3$	$4-C_6H_4-2-NO_2$
A.78)	$-COSCH_3$	$4-SCF_3$
A.79)	$-COSCH_3$	$4-SOCF_3$
A.80)	$-COSCH_3$	$4-SO_2CF_3$
A.81)	$-COSCH_3$	2-F-4-CN
A.82)	$-COSCH_3$	$2-F- 4-NO_2$
A.83)	$-COSCH_3$	$4-COCF_3$
A.84)	$-COSCH_3$	4-CHO
A.85)	$-COSCH_3$	$4-Cl- 3-NO_2$
A.86)	$-COSCH_3$	$4-NH_2$
A.87)	$-COSCH_3$	3-Cl-4-CN
A.88)	$-COSCH_3$	$3-OCH_3-4-NO_2$
A.89)	$-COSCH_3$	$3-Cl-4-NO_2$
A.90)	$-COSCH_3$	$3-F-4-NO_2$
A.91)	$-COSCH_3$	$4-C_6H_4-4-CN$
A.92)	$-COSCH_3$	$4-C_6H_4-2-CN$
A.93)	$-CH_2OC(O)C(CH_3)_3$	4-CN
A.94)	$-CH_2OC(O)C(CH_3)_3$	$4-NO_2$

	R_2	$(R_{3b})_{n2}$
A.95)	$-CH_2OC(O)C(CH_3)_3$	4-CF_3
A.96)	$-CH_2OC(O)C(CH_3)_3$	2-Cl - 4-NO_2
A.97)	$-CH_2OC(O)C(CH_3)_3$	3-CH_3 - 4-NO_2
A.98)	$-CH_2OC(O)C(CH_3)_3$	4-Cl
A.99)	$-CH_2OC(O)C(CH_3)_3$	4-C_6H_4-4-NO_2
A.100)	$-CH_2OC(O)C(CH_3)_3$	4-C_6H_4-2-NO_2
A.101)	$-CH_2OC(O)C(CH_3)_3$	4-SCF_3
A.102)	$-CH_2OC(O)C(CH_3)_3$	4-$SOCF_3$
A.103)	$-CH_2OC(O)C(CH_3)_3$	4-SO_2CF_3
A.104)	$-CH_2OC(O)C(CH_3)_3$	2-F-4-CN
A.105)	$-CH_2OC(O)C(CH_3)_3$	2-F- 4-NO_2
A.106)	$-CH_2OC(O)C(CH_3)_3$	4-$COCF_3$
A.107)	$-CH_2OC(O)C(CH_3)_3$	4-CHO
A.108)	$-CH_2OC(O)C(CH_3)_3$	4-Cl-3-NO_2
A.109)	$-CH_2OC(O)C(CH_3)_3$	4-NH_2
A.110)	$-CH_2OC(O)C(CH_3)_3$	3-Cl-4-CN
A.111)	$-CH_2OC(O)C(CH_3)_3$	3-OCH_3-4-NO_2
A.112)	$-CH_2OC(O)C(CH_3)_3$	3-Cl-4-NO_2
A.113)	$-CH_2OC(O)C(CH_3)_3$	3-F-4-NO_2
A.114)	$-CH_2OC(O)C(CH_3)_3$	4-C_6H_4-4-CN
A.115)	$-CH_2OC(O)C(CH_3)_3$	4-C_6H_4-2-CN
A.116)	$-CH_2OC_2H_4OCH_3$	4-CN
A.117)	$-CH_2OC_2H_4OCH_3$	4-NO_2
A.118)	$-CH_2OC_2H_4OCH_3$	4-CF_3
A.119)	$-CH_2OC_2H_4OCH_3$	2-Cl - 4-NO_2
A.120)	$-CH_2OC_2H_4OCH_3$	3-CH_3 - 4-NO_2
A.121)	$-CH_2OC_2H_4OCH_3$	4-Cl
A.122)	$-CH_2OC_2H_4OCH_3$	4-C_6H_4-4-NO_2
A.123)	$-CH_2OC_2H_4OCH_3$	4-C_6H_4-2-NO_2
A.124)	$-CH_2OC_2H_4OCH_3$	4-SCF_3
A.125)	$-CH_2OC_2H_4OCH_3$	4-$SOCF_3$
A.126)	$-CH_2OC_2H_4OCH_3$	4-SO_2CF_3

	R_2	$(R_{3b})_{n2}$
A.127)	$-CH_2OC_2H_4OCH_3$	2-F-4-CN
A.128)	$-CH_2OC_2H_4OCH_3$	2-F- 4-NO_2
A.129)	$-CH_2OC_2H_4OCH_3$	4-$COCF_3$
A.130)	$-CH_2OC_2H_4OCH_3$	4-CHO
A.131)	$-CH_2OC_2H_4OCH_3$	4-Cl- 3-NO_2
A.132)	$-CH_2OC_2H_4OCH_3$	4-NH_2
A.133)	$-CH_2OC_2H_4OCH_3$	3-Cl-4-CN
A.134)	$-CH_2OC_2H_4OCH_3$	3-OCH_3-4-NO_2
A.135)	$-CH_2OC_2H_4OCH_3$	3-Cl-4-NO_2
A.136)	$-CH_2OC_2H_4OCH_3$	3-F-4-NO_2
A.137)	$-CH_2OC_2H_4OCH_3$	4-C_6H_4-4-CN
A.138)	$-CH_2OC_2H_4OCH_3$	4-C_6H_4-2-CN
A.139)	$-CH_2OCH_2CH=CH_2$	4-CN
A.140)	$-CH_2OCH_2CH=CH_2$	4-NO_2
A.141)	$-CH_2OCH_2CH=CH_2$	4-CF_3
A.142)	$-CH_2OCH_2CH=CH_2$	2-Cl - 4-NO_2
A.143)	$-CH_2OCH_2CH=CH_2$	3-CH_3 - 4-NO_2
A.144)	$-CH_2OCH_2CH=CH_2$	4-Cl
A.145)	$-CH_2OCH_2CH=CH_2$	4-C_6H_4-4-NO_2
A.146)	$-CH_2OCH_2CH=CH_2$	4-C_6H_4-2-NO_2
A.147)	$-CH_2OCH_2CH=CH_2$	4-SCF_3
A.148)	$-CH_2OCH_2CH=CH_2$	4-$SOCF_3$
A.149)	$-CH_2OCH_2CH=CH_2$	4-SO_2CF_3
A.150)	$-CH_2OCH_2CH=CH_2$	2-F-4-CN
A.151)	$-CH_2OCH_2CH=CH_2$	2-F- 4-NO_2
A.152)	$-CH_2OCH_2CH=CH_2$	4-$COCF_3$
A.153)	$-CH_2OCH_2CH=CH_2$	4-CHO
A.154)	$-CH_2OCH_2CH=CH_2$	4-Cl-3-NO_2
A.155)	$-CH_2OCH_2CH=CH_2$	4-NH_2
A.156)	$-CH_2OCH_2CH=CH_2$	3-Cl-4-CN
A.157)	$-CH_2OCH_2CH=CH_2$	3-OCH_3-4-NO_2
A.158)	$-CH_2OCH_2CH=CH_2$	3-Cl-4-NO_2

	R_2	$(R_{3b})_{n2}$
A.159)	$-CH_2OCH_2CH=CH_2$	3-F-4-NO_2
A.160)	$-CH_2OCH_2CH=CH_2$	4-C_6H_4-4-CN
A.161)	$-CH_2OCH_2CH=CH_2$	4-C_6H_4-2-CN
A.162)	$-CH_2OCH_2C\equiv CH$	4-CN
A.163)	$-CH_2OCH_2C\equiv CH$	4-NO_2
A.164)	$-CH_2OCH_2C\equiv CH$	4-CF_3
A.165)	$-CH_2OCH_2C\equiv CH$	2-Cl - 4-NO_2
A.166)	$-CH_2OCH_2C\equiv CH$	3-CH_3 - 4-NO_2
A.167)	$-CH_2OCH_2C\equiv CH$	4-Cl
A.168)	$-CH_2OCH_2C\equiv CH$	4-C_6H_4-4-NO_2
A.169)	$-CH_2OCH_2C\equiv CH$	4-C_6H_4-2-NO_2
A.170)	$-CH_2OCH_2C\equiv CH$	4-SCF_3
A.171)	$-CH_2OCH_2C\equiv CH$	4-$SOCF_3$
A.172)	$-CH_2OCH_2C\equiv CH$	4-SO_2CF_3
A.173)	$-CH_2OCH_2C\equiv CH$	2-F-4-CN
A.174)	$-CH_2OCH_2C\equiv CH$	2-F- 4-NO_2
A.175)	$-CH_2OCH_2C\equiv CH$	4-$COCF_3$
A.176)	$-CH_2OCH_2C\equiv CH$	4-CHO
A.177)	$-CH_2OCH_2C\equiv CH$	4-Cl- 3-NO_2
A.178)	$-CH_2OCH_2C\equiv CH$	4-NH_2
A.179)	$-CH_2OCH_2C\equiv CH$	3-Cl-4-CN
A.180)	$-CH_2OCH_2C\equiv CH$	3-OCH_3-4-NO_2
A.181)	$-CH_2OCH_2C\equiv CH$	3-Cl-4-NO_2
A.182)	$-CH_2OCH_2C\equiv CH$	3-F-4-NO_2
A.183)	$-CH_2OCH_2C\equiv CH$	4-C_6H_4-4-CN
A.184)	$-CH_2OCH_2C\equiv CH$	4-C_6H_4-2-CN
A.185)	$-COC_{10}H_{21}$	4-CN
A.186)	$-COC_{10}H_{21}$	4-NO_2
A.187)	$-COC_{10}H_{21}$	4-CF_3
A.188)	$-COC_{10}H_{21}$	2-Cl - 4-NO_2

	R_2	$(R_{3b})_{n2}$
A.189)	$-COC_{10}H_{21}$	3-CH_3 - 4-NO_2
A.190)	$-COC_{10}H_{21}$	4-Cl
A.191)	$-COC_{10}H_{21}$	4-C_6H_4-4-NO_2
A.192)	$-COC_{10}H_{21}$	4-C_6H_4-2-NO_2
A.193)	$-COC_{10}H_{21}$	4-SCF_3
A.194)	$-COC_{10}H_{21}$	4-$SOCF_3$
A.195)	$-COC_{10}H_{21}$	4-SO_2CF_3
A.196)	$-COC_{10}H_{21}$	2-F-4-CN
A.197)	$-COC_{10}H_{21}$	2-F- 4-NO_2
A.198)	$-COC_{10}H_{21}$	4-$COCF_3$
A.199)	$-COC_{10}H_{21}$	4-CHO
A.200)	$-COC_{10}H_{21}$	4-Cl-3-NO_2
A.201)	$-COC_{10}H_{21}$	4-NH_2
A.202)	$-COC_{10}H_{21}$	3-Cl-4-CN
A.203)	$-COC_{10}H_{21}$	3-OCH_3-4-NO_2
A.204)	$-COC_{10}H_{21}$	3-Cl-4-NO_2
A.205)	$-COC_{10}H_{21}$	3-F-4-NO_2
A.206)	$-COC_{10}H_{21}$	4-C_6H_4-4-CN
A.207)	$-COC_{10}H_{21}$	4-C_6H_4-2-CN
A.208)	-H	4-SCF_3
A.209)	-H	4-$SOCF_3$
A.210)	-H	4-SO_2CF_3
A.211)	-H	4-SC_2F_5
A.212)	-H	4-SOC_2F_5
A.213)	-H	4-$SO_2C_2F_5$
A.214)	-H	4-SCF_2H
A.215)	-H	4-$SOCF_2H$
A.216)	-H	4-SO_2CF_2H
A.217)	-H	4-SCF_2Cl
A.218)	-H	4-$SOCF_2Cl$
A.219)	-H	4-SO_2CF_2Cl
A.220)	-H	4-SF_5

	R_2	$(R_{3b})_{n2}$
A.221)	-H	SCF_2Br
A.222)	-H	$SOCF_2Br$
A.223)	-H	SO_2CF_2Br
A.224)	-H	SCF_2CF_2Br
A.225)	-H	$SOCF_2CF_2Br$
A.226)	-H	$SO_2CF_2CF_2Br$
A.227)	$-CH_3$	4-SCF_3
A.228)	$-CH_3$	4-$SOCF_3$
A.229)	$-CH_3$	4-SO_2CF_3
A.230)	$-CH_3$	4-SC_2F_5
A.231)	$-CH_3$	4-SOC_2F_5
A.232)	$-CH_3$	4-$SO_2C_2F_5$
A.233)	$-CH_3$	4-SCF_2H
A.234)	$-CH_3$	4-$SOCF_2H$
A.235)	$-CH_3$	4-SO_2CF_2H
A.236)	$-CH_3$	4-SCF_2Cl
A.237)	$-CH_3$	4-$SOCF_2Cl$
A.238)	$-CH_3$	4-SO_2CF_2Cl
A.239)	$-CH_3$	4-SF_5
A.240)	$-CH_3$	SCF_2Br
A.241)	$-CH_3$	$SOCF_2Br$
A.242)	$-CH_3$	SO_2CF_2Br
A.243)	$-CH_3$	SCF_2CF_2Br
A.244)	$-CH_3$	$SOCF_2CF_2Br$
A.245)	$-CH_3$	$SO_2CF_2CF_2Br$
A.246)	$-C_2H_5$	4-SCF_3
A.247)	$-C_2H_5$	4-$SOCF_3$
A.248)	$-C_2H_5$	4-SO_2CF_3
A.249)	$-C_2H_5$	4-SC_2F_5
A.250)	$-C_2H_5$	4-SOC_2F_5
A.251)	$-C_2H_5$	4-$SO_2C_2F_5$
A.252)	$-C_2H_5$	4-SCF_2H

	R_2	$(R_{3b})_{n2}$
A.253)	$-C_2H_5$	4-$SOCF_2H$
A.254)	$-C_2H_5$	4-SO_2CF_2H
A.255)	$-C_2H_5$	4-SCF_2Cl
A.256)	$-C_2H_5$	4-$SOCF_2Cl$
A.257)	$-C_2H_5$	4-SO_2CF_2Cl
A.258)	$-C_2H_5$	4-SF_5
A.259)	$-C_2H_5$	SCF_2Br
A.260)	$-C_2H_5$	$SOCF_2Br$
A.261)	$-C_2H_5$	SO_2CF_2Br
A.262)	$-C_2H_5$	SCF_2CF_2Br
A.263)	$-C_2H_5$	$SOCF_2CF_2Br$
A.264)	$-C_2H_5$	$SO_2CF_2CF_2Br$
A.265)	$-CH(CH_3)_2$	4-SCF_3
A.266)	$-CH(CH_3)_2$	4-$SOCF_3$
A.267)	$-CH(CH_3)_2$	4-SO_2CF_3
A.268)	$-CH(CH_3)_2$	4-SC_2F_5
A.269)	$-CH(CH_3)_2$	4-SOC_2F_5
A.270)	$-CH(CH_3)_2$	4-$SO_2C_2F_5$
A.271)	$-CH(CH_3)_2$	4-SCF_2H
A.272)	$-CH(CH_3)_2$	4-$SOCF_2H$
A.273)	$-CH(CH_3)_2$	4-SO_2CF_2H
A.274)	$-CH(CH_3)_2$	4-SCF_2Cl
A.275)	$-CH(CH_3)_2$	4-$SOCF_2Cl$
A.276)	$-CH(CH_3)_2$	4-SO_2CF_2Cl
A.277)	$-CH(CH_3)_2$	4-SF_5
A.278)	$-CH(CH_3)_2$	SCF_2Br
A.279)	$-CH(CH_3)_2$	$SOCF_2Br$
A.280)	$-CH(CH_3)_2$	SO_2CF_2Br
A.281)	$-CH(CH_3)_2$	SCF_2CF_2Br
A.282)	$-CH(CH_3)_2$	$SOCF_2CF_2Br$
A.283)	$-CH(CH_3)_2$	$SO_2CF_2CF_2Br$
A.284)	$-COCH_3$	4-SCF_3

	R_2	$(R_{3b})_{n2}$
A.285)	$-COCH_3$	$4-SOCF_3$
A.286)	$-COCH_3$	$4-SO_2CF_3$
A.287)	$-COCH_3$	$4-SC_2F_5$
A.288)	$-COCH_3$	$4-SOC_2F_5$
A.289)	$-COCH_3$	$4-SO_2C_2F_5$
A.290)	$-COCH_3$	$4-SCF_2H$
A.291)	$-COCH_3$	$4-SOCF_2H$
A.292)	$-COCH_3$	$4-SO_2CF_2H$
A.293)	$-COCH_3$	$4-SCF_2Cl$
A.294)	$-COCH_3$	$4-SOCF_2Cl$
A.295)	$-COCH_3$	$4-SO_2CF_2Cl$
A.296)	$-COCH_3$	$4-SF_5$
A.297)	$-COCH_3$	SCF_2Br
A.298)	$-COCH_3$	$SOCF_2Br$
A.299)	$-COCH_3$	SO_2CF_2Br
A.300)	$-COCH_3$	SCF_2CF_2Br
A.301)	$-COCH_3$	$SOCF_2CF_2Br$
A.302)	$-COCH_3$	$SO_2CF_2CF_2Br$
A.303)	$-COC_2H_5$	$4-SCF_3$
A.304)	$-COC_2H_5$	$4-SOCF_3$
A.305)	$-COC_2H_5$	$4-SO_2CF_3$
A.306)	$-COC_2H_5$	$4-SC_2F_5$
A.307)	$-COC_2H_5$	$4-SOC_2F_5$
A.308)	$-COC_2H_5$	$4-SO_2C_2F_5$
A.309)	$-COC_2H_5$	$4-SCF_2H$
A.310)	$-COC_2H_5$	$4-SOCF_2H$
A.311)	$-COC_2H_5$	$4-SO_2CF_2H$
A.312)	$-COC_2H_5$	$4-SCF_2Cl$
A.313)	$-COC_2H_5$	$4-SOCF_2Cl$
A.314)	$-COC_2H_5$	$4-SO_2CF_2Cl$
A.315)	$-COC_2H_5$	$4-SF_5$
A.316)	$-CO_2CH_3$	$4-SCF_3$

	R_2	$(R_{3b})_{n2}$
A.317)	$-COC_2H_5$	SCF_2Br
A.318)	$-COC_2H_5$	$SOCF_2Br$
A.319)	$-COC_2H_5$	SO_2CF_2Br
A.320)	$-COC_2H_5$	SCF_2CF_2Br
A.321)	$-COC_2H_5$	$SOCF_2CF_2Br$
A.322)	$-CO_2CH_3$	$SO_2CF_2CF_2Br$
A.323)	$-CO_2CH_3$	$4-SOCF_3$
A.324)	$-CO_2CH_3$	$4-SO_2CF_3$
A.325)	$-CO_2CH_3$	$4-SC_2F_5$
A.326)	$-CO_2CH_3$	$4-SOC_2F_5$
A.327)	$-CO_2CH_3$	$4-SO_2C_2F_5$
A.328)	$-CO_2CH_3$	$4-SCF_2H$
A.329)	$-CO_2CH_3$	$4-SOCF_2H$
A.330)	$-CO_2CH_3$	$4-SO_2CF_2H$
A.331)	$-CO_2CH_3$	$4-SCF_2Cl$
A.332)	$-CO_2CH_3$	$4-SOCF_2Cl$
A.333)	$-CO_2CH_3$	$4-SO_2CF_2Cl$
A.334)	$-CO_2CH_3$	$4-SF_5$
A.335)	$-CO_2CH_3$	SCF_2Br
A.336)	$-CO_2CH_3$	$SOCF_2Br$
A.337)	$-CO_2CH_3$	SO_2CF_2Br
A.338)	$-CO_2CH_3$	SCF_2CF_2Br
A.339)	$-CO_2CH_3$	$SOCF_2CF_2Br$
A.340)	$-CO_2CH_3$	$SO_2CF_2CF_2Br$
A.341)	$-CO_2C_2H_5$	$4-SCF_3$
A.342)	$-CO_2C_2H_5$	$4-SOCF_3$
A.343)	$-CO_2C_2H_5$	$4-SO_2CF_3$
A.344)	$-CO_2C_2H_5$	$4-SC_2F_5$
A.345)	$-CO_2C_2H_5$	$4-SOC_2F_5$
A.346)	$-CO_2C_2H_5$	$4-SO_2C_2F_5$
A.347)	$-CO_2C_2H_5$	$4-SCF_2H$
A.348)	$-CO_2C_2H_5$	$4-SOCF_2H$

	R_2	$(R_{3b})_{n2}$
A.349)	$-CO_2C_2H_5$	$4-SO_2CF_2H$
A.350)	$-CO_2C_2H_5$	$4-SCF_2Cl$
A.351)	$-CO_2C_2H_5$	$4-SOCF_2Cl$
A.352)	$-CO_2C_2H_5$	$4-SO_2CF_2Cl$
A.353)	$-CO_2C_2H_5$	$4-SF_5$
A.354)	$-CO_2C_2H_5$	SCF_2Br
A.355)	$-CO_2C_2H_5$	$SOCF_2Br$
A.356)	$-CO_2C_2H_5$	SO_2CF_2Br
A.357)	$-CO_2C_2H_5$	SCF_2CF_2Br
A.358)	$-CO_2C_2H_5$	$SOCF_2CF_2Br$
A.359)	$-CO_2C_2H_5$	$SO_2CF_2CF_2Br$
A.360)	$-CH_2OC_2H_5$	$4-SCF_3$
A.361)	$-CH_2OC_2H_5$	$4-SOCF_3$
A.362)	$-CH_2OC_2H_5$	$4-SO_2CF_3$
A.363)	$-CH_2OC_2H_5$	$4-SC_2F_5$
A.364)	$-CH_2OC_2H_5$	$4-SOC_2F_5$
A.365)	$-CH_2OC_2H_5$	$4-SO_2C_2F_5$
A.366)	$-CH_2OC_2H_5$	$4-SCF_2H$
A.367)	$-CH_2OC_2H_5$	$4-SOCF_2H$
A.368)	$-CH_2OC_2H_5$	$4-SO_2CF_2H$
A.369)	$-CH_2OC_2H_5$	$4-SCF_2Cl$
A.370)	$-CH_2OC_2H_5$	$4-SOCF_2Cl$
A.371)	$-CH_2OC_2H_5$	$4-SO_2CF_2Cl$
A.372)	$-CH_2OC_2H_5$	$4-SF_5$
A.373)	$-CH_2OC_2H_5$	SCF_2Br
A.374)	$-CH_2OC_2H_5$	$SOCF_2Br$
A.375)	$-CH_2OC_2H_5$	SO_2CF_2Br
A.376)	$-CH_2OC_2H_5$	SCF_2CF_2Br
A.377)	$-CH_2OC_2H_5$	$SOCF_2CF_2Br$
A.378)	$-CH_2OC_2H_5$	$SO_2CF_2CF_2Br$
A.379)	$-CH_2OCH_3$	$4-SCF_3$
A.380)	$-CH_2OCH_3$	$4-SOCF_3$

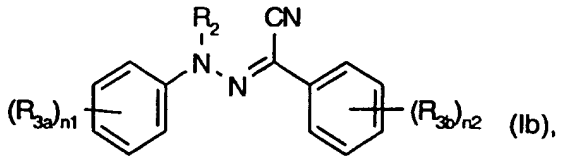
	R_2	$(R_{3b})_{n2}$
A.381)	$-CH_2OCH_3$	$4-SO_2CF_3$
A.382)	$-CH_2OCH_3$	$4-SC_2F_5$
A.383)	$-CH_2OCH_3$	$4-SOC_2F_5$
A.384)	$-CH_2OCH_3$	$4-SO_2C_2F_5$
A.385)	$-CH_2OCH_3$	$4-SCF_2H$
A.386)	$-CH_2OCH_3$	$4-SOCF_2H$
A.387)	$-CH_2OCH_3$	$4-SO_2CF_2H$
A.388)	$-CH_2OCH_3$	$4-SCF_2Cl$
A.389)	$-CH_2OCH_3$	$4-SOCF_2Cl$
A.390)	$-CH_2OCH_3$	$4-SO_2CF_2Cl$
A.391)	$-CH_2OCH_3$	$4-SF_5$
A.392)	$-CH_2OCH_3$	SCF_2Br
A.393)	$-CH_2OCH_3$	$SOCF_2Br$
A.394)	$-CH_2OCH_3$	SO_2CF_2Br
A.395)	$-CH_2OCH_3$	SCF_2CF_2Br
A.396)	$-CH_2OCH_3$	$SOCF_2CF_2Br$
A.397)	$-CH_2OCH_3$	$SO_2CF_2CF_2Br$
A.398)	$-CH_2O-n-C_3H_7$	$4-SCF_3$
A.399)	$-CH_2O-n-C_3H_7$	$4-SOCF_3$
A.400)	$-CH_2O-n-C_3H_7$	$4-SO_2CF_3$
A.401)	$-CH_2O-n-C_3H_7$	$4-SC_2F_5$
A.402)	$-CH_2O-n-C_3H_7$	$4-SOC_2F_5$
A.403)	$-CH_2O-n-C_3H_7$	$4-SO_2C_2F_5$
A.404)	$-CH_2O-n-C_3H_7$	$4-SCF_2H$
A.405)	$-CH_2O-n-C_3H_7$	$4-SOCF_2H$
A.406)	$-CH_2O-n-C_3H_7$	$4-SO_2CF_2H$
A.407)	$-CH_2O-n-C_3H_7$	$4-SCF_2Cl$
A.408)	$-CH_2O-n-C_3H_7$	$4-SOCF_2Cl$
A.409)	$-CH_2O-n-C_3H_7$	$4-SO_2CF_2Cl$
A.410)	$-CH_2O-n-C_3H_7$	$4-SF_5$
A.411)	$-CH_2O-n-C_3H_7$	SCF_2Br
A.412)	$-CH_2O-n-C_3H_7$	$SOCF_2Br$

	R_2	$(R_{3b})_{n2}$
A.413)	$-CH_2O$-n-C_3H_7	SO_2CF_2Br
A.414)	$-CH_2O$-n-C_3H_7	SCF_2CF_2Br
A.415)	$-CH_2O$-n-C_3H_7	$SOCF_2CF_2Br$
A.416)	$-CH_2O$-n-C_3H_7	$SO_2CF_2CF_2Br$
A.417)	$-CH_2N(CH_3)CO_2CH_3$	4-SCF_3
A.418)	$-CH_2N(CH_3)CO_2CH_3$	4-$SOCF_3$
A.419)	$-CH_2N(CH_3)CO_2CH_3$	4-SO_2CF_3
A.420)	$-CH_2N(CH_3)CO_2CH_3$	4-SC_2F_5
A.421)	$-CH_2N(CH_3)CO_2CH_3$	4-SOC_2F_5
A.422)	$-CH_2N(CH_3)CO_2CH_3$	4-$SO_2C_2F_5$
A.423)	$-CH_2N(CH_3)CO_2CH_3$	4-SCF_2H
A.424)	$-CH_2N(CH_3)CO_2CH_3$	4-$SOCF_2H$
A.425)	$-CH_2N(CH_3)CO_2CH_3$	4-SO_2CF_2H
A.426)	$-CH_2N(CH_3)CO_2CH_3$	4-SCF_2Cl
A.427)	$-CH_2N(CH_3)CO_2CH_3$	4-$SOCF_2Cl$
A.428)	$-CH_2N(CH_3)CO_2CH_3$	4-SO_2CF_2Cl
A.429)	$-CH_2N(CH_3)CO_2CH_3$	4-SF_5
A.430)	$-CH_2N(CH_3)CO_2CH_3$	SCF_2Br
A.431)	$-CH_2N(CH_3)CO_2CH_3$	$SOCF_2Br$
A.432)	$-CH_2N(CH_3)CO_2CH_3$	SO_2CF_2Br
A.433)	$-CH_2N(CH_3)CO_2CH_3$	SCF_2CF_2Br
A.434)	$-CH_2N(CH_3)CO_2CH_3$	$SOCF_2CF_2Br$
A.435)	$-CH_2N(CH_3)CO_2CH_3$	$SO_2CF_2CF_2Br$
A.436)	$-CH_2N(CH_3)SO_2CH_3$	4-SCF_3
A.437)	$-CH_2N(CH_3)SO_2CH_3$	4-$SOCF_3$
A.438)	$-CH_2N(CH_3)SO_2CH_3$	4-SO_2CF_3
A.439)	$-CH_2N(CH_3)SO_2CH_3$	4-SC_2F_5
A.440)	$-CH_2N(CH_3)SO_2CH_3$	4-SOC_2F_5
A.441)	$-CH_2N(CH_3)SO_2CH_3$	4-$SO_2C_2F_5$
A.442)	$-CH_2N(CH_3)SO_2CH_3$	4-SCF_2H
A.443)	$-CH_2N(CH_3)SO_2CH_3$	4-$SOCF_2H$
A.444)	$-CH_2N(CH_3)SO_2CH_3$	4-SO_2CF_2H

	R_2	$(R_{3b})_{n2}$
A.445)	$-CH_2N(CH_3)SO_2CH_3$	4-SCF_2Cl
A.446)	$-CH_2N(CH_3)SO_2CH_3$	4-$SOCF_2Cl$
A.447)	$-CH_2N(CH_3)SO_2CH_3$	4-SO_2CF_2Cl
A.448)	$-CH_2N(CH_3)SO_2CH_3$	4-SF_5
A.449)	$-CH_2N(CH_3)SO_2CH_3$	SCF_2Br
A.450)	$-CH_2N(CH_3)SO_2CH_3$	$SOCF_2Br$
A.451)	$-CH_2N(CH_3)SO_2CH_3$	SO_2CF_2Br
A.452)	$-CH_2N(CH_3)SO_2CH_3$	SCF_2CF_2Br
A.453)	$-CH_2N(CH_3)SO_2CH_3$	$SOCF_2CF_2Br$
A.454)	$-CH_2N(CH_3)SO_2CH_3$	$SO_2CF_2CF_2Br$

Table 4:

Compounds of general formula



(Ib),

wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-CF_3 and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Table 5:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,4,6-Cl_3 and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 6:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2-Cl-4-CF_3 and R_2 and $(R_{3b})_n$ each correspond to one line of Table A.

Table 7:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-NO_2 and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 8:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-OCF_3 and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 9:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-F and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 10:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-Br and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 11:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2-Cl-4-CF_3-6-F and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 12:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,3,6-Cl_3-4-CF_3 and R_2 and $(R_{3b})_n$ each correspond to one line of Table A.

Table 13:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-3-F-4-CF_3 and R_2 and $(R_{3b})_n$ each correspond to one line of Table A.

Table 14:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,3-F_2-4-CF_3-6-Cl and R_2 and $(R_{3b})_n$ each correspond to one line of Table A.

Table 15:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl-4-CN and R_2 and $(R_{3b})_n$ each correspond to one line of Table A.

Table 16:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,4-Cl_2-6-CF_3 and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 17:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-SCF_3 and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Table 18:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-$SOCF_3$ and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Table 19:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-SO_2CF_3 and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Table 20:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-SO_2CH_3 and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Table 21:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-OCF_2Br and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 22:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-OCF_2H and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 23:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-C_2F_5 and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 24:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-$(NO_2)_2$-4-CF_3 and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 25:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-$(NO_2)_2$-4-Cl and R_2 and $(R_{3b})_{n2}$ each correspond to one line of Table A.

Table 26:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-OSO_2CH_3 and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Table 27:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-OSO_2CF_3 and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Table 28:

Compounds of general formula (Ib), wherein $(R_{3a})_{n1}$ is 2,6-Cl_2-4-SF_5 and R_2 and $(R_{3b})_{n2}$ each correspond to a line of Table A.

Examples of formulations of compounds of the invention, i.e. solutions, granulates, dusts, wettable powders, emulsifiable concentrates, coated granules, and suspension concentrates are of the types listed for instance in EP-A-580'553(Case 19164), Examples F1 to F10.

Biological Examples

Example B1: Ovicidal effect on *Heliothis virescens*

Eggs of *Heliothis virescens* deposited on filter paper are immersed briefly in a test solution comprising 400 ppm of the mixture of active ingredients to be tested in acetone/water. After the test solution has dried, the eggs are incubated in Petri dishes. After 6 days, the percentage hatching rate of the eggs is compared with that for untreated controls (% reduction in hatching rate).

Compounds listed in Tables 3 to 5 show good activity against *Heliothis virescens*. In particular, compounds 2.1 to 2.5, 2.8 to 2.13 and 3.7 show a response of more than 80%.

Example B2: Effect on *Spodoptera littoralis* caterpillars

Young soya plants are sprayed with an aqueous emulsion containing 400 ppm of active ingredient. After the spray deposit has dried, the soya plants are populated with 10 third-instar larvae of *Spodoptera littoralis* and placed in a plastic container. Three days later they are evaluated. The percentage reduction of the population and percentage reduction in feeding damage (% response) is determined by comparing the number of dead larvae and the extent of feeding damage on the treated plants with those on the untreated plants.

The compounds of table 1 show good efficacy against *Spodoptera littoralis* in this test. In particular, compounds 2.1 to 2.5, 2.7 to 2.18 and 3.7 to 3.9 show a response of more than 80%.

Example B3: Effect on *Diabrotica balteata* larvae

Corn seedlings are sprayed with an aqueous emulsion containing 400 ppm of active ingredient. After drying of the spray deposit, the corn seedlings are inoculated with 10 second-instar larvae of *Diabrotica balteata* and placed in a plastic container. Six days later they are evaluated. The percentage reduction of the population (% response) is determined by comparing the number of dead larvae on the treated plants with those on the untreated plants.

The compounds of Tables 3 to 5 show good efficacy against *Diabrotica balteata* in this test. In particular, compounds 2.1 to 2.4, 2.6, 2.7, 2.11, 2.25 to 2.28 and 3.9 show a response of more than 80%.

Example B4: Effect on *Plutella xylostella* caterpillars

Young cabbage plants are sprayed with an aqueous emulsion containing 400 ppm of active ingredient. After the spray deposit has dried, the cabbage plants are populated with 10 third-instar larvae of *Plutella xylostella* and placed in a plastic container. Three days later they are evaluated. The percentage reduction of the population and percentage reduction in feeding damage (% response) is determined by comparing the number of dead larvae and the extent of feeding damage on the treated plants with those on the untreated plants.

The compounds of Tables 3 to 5 show good efficacy against *Plutella xylostella* in this test.

Example B5: Effect on *Tetranychus urticae*

Young bean plants are inoculated with a mixed population of *Tetranychus urticae* and, one day later, are sprayed with an aqueous emulsion containing 400 ppm of active ingredient. The plants are incubated for 6 days at 25°C and then evaluated. The percentage reduction of the population (% response) is determined by comparing the number of dead eggs, larvae, and adults on the treated plants with those on the untreated plants.

The compounds of Tables 3 to 5 show good efficacy against *Tetranychus urticae* in this test.

Example B6: Effect on *Aphis craccivora*

Pea seedlings are infected with *Aphis craccivora*, then sprayed with an emulsion containing 400 ppm of active ingredient and incubated at 20°C. Three and six days later they are evaluated. The percentage reduction of the population (% response) is determined by comparing the number of dead aphids on the treated plants with those on the untreated plants.

The compounds of Tables 3 to 5 show good efficacy against *Aphis craccivora* in this test. In particular, compounds 2.7, 2.22 and 3.8 show a good response of more than 80%.

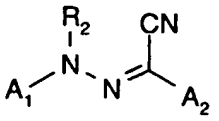
Example B7: Effect on *Myzus persicae*

Pea seedlings are infected with *Myzus persicae*, then sprayed with an emulsion containing 400 ppm of active ingredient and incubated at 20°C. Three and six days later they are evaluated. The percentage reduction of the population (% response) is determined by comparing the number of dead aphids on the treated plants with those on the untreated plants.

The compounds of Tables 3 to 5 show good efficacy against *Myzus persicae* in this test. In particular, compounds 3.7 and 3.13 show a good response of more than 80%.

What is claimed is

1. Compound of formula



(I),

wherein

A_1 and A_2 are independent of one another and in each case represent a monocyclic or bicyclic aryl or heteroaryl radical, and each heteroaryl radical independently of the other having 1 up to and including 4 hetero atoms selected from the group consisting of N, O and S; and

A_1 is substituted where appropriate with substituent $(R_{3a})_{n1}$ and A_2 where appropriate with substituent $(R_{3b})_{n2}$;

n_1 and n_2 are independently of one another 1, 2, 3 or 4, depending on the possibilities for substitution on ring system A_1 and A_2; and either

(A) R_{3a} and R_{3b} independently of one another are hydrogen, halogen, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_2-C_4alkenyl, C_2-C_4alkinyl, halogen-C_2-C_4alkenyl, halogen-C_2-C_4alkinyl, C_1-C_6alkoxy, halogen-C_1-C_6-alkoxy, C_2-C_6alkenyloxy, C_2-C_6alkinyloxy, halogen-C_2-C_6alkenyloxy, halogen-C_2-C_6alkinyloxy, -OH, -SF_5, -CHO, -C(=O)-C_1-C_6-alkyl, -C(=O)-halogen-C_1-C_6alkyl, -C(=O)-OC_1-C_6alkyl, -C(=O)-O-halogen-C_1-C_6alkyl, -O-C(=O)N$(R_6)_2$ (wherein both R_6 substituents are independent of one another), -CN, -NO_2, -S(=O)$_2$N$(R_6)_2$ (wherein both R_6 substituents are independent of one another), -S(=O)$_p$-C_1-C_6alkyl, -S(=O)$_p$-halogen-C_1-C_6alkyl, -O-S(=O)$_p$-C_1-C_6alkyl, -O-S(=O)$_p$-halogen-C_1-C_6alkyl, phenyl, benzyl, phenoxy or benzyloxy, wherein each of the phenyl, benzyl, phenoxy, or benzyloxy radicals is unsubstituted or substituted in the aromatic ring independently of one another once to five times with substituents selected from the group consisting of halogen, cyano, NO_2, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_1-C_6alkoxy and halogen-C_1-C_6alkoxy; and

R_2 is R_{2a}; or,

(B) R_{3a} and R_{3b} independently of one another as defined under (A) and at least one of the radicals R_{3a} or R_{3b} is -CR_5=CR_5R_{14}, -$NR_{11}R_{12}$, -C(=O)CN, -C(=O)C(=O)O-C_1-C_6alkyl, -CR_{15}=NOR_{10} or a five or six-membered heteroaryl ring, , wherein the said heteroaryl ring is substituted, where appropriate, depending on the substitution possibilities on

the ring, with 1 to 3 substituents selected from the group consisting of halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, NO_2 and CN; and

R_2 is R_{2a} or R_{2b}; or

(C) R_{3a} has one of the meanings defined hereinbefore under (A) or (B);

R_{3b} is hydrogen, halogen, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_2-C_4alkenyl, C_2-C_4alkinyl, halogen-C_2-C_4alkenyl, halogen-C_2-C_4alkinyl, C_1-C_6alkoxy, halogen-C_1-C_6alkoxy, C_2-C_6alkenyloxy, C_2-C_6alkinyloxy, halogen-C_2-C_6alkenyloxy, halogen-C_2-C_6alkinyloxy, -OH, $-SF_5$, -CHO, -C(=O)-C_1-C_6alkyl, -C(=O)-halogen-C_1-C_6alkyl, -C(=O)-OC_1-C_6alkyl, -C(=O)-O-halogen-C_1-C_6alkyl, -O-C(=O)N(R_6)$_2$ (wherein the two R_6 substituents are independent of one another), -CN, $-NO_2$, phenyl, benzyl, phenoxy or benzyloxy, wherein each of the phenyl, benzyl, phenoxy, or benzyloxy radicals is unsubstituted or substituted in the aromatic ring independently of one another once to five times with substituents selected from the group consisting of halogen, cyano, NO_2, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_1-C_6alkoxy and halogen-C_1-C_6alkoxy; -S(=O)$_p$-C_1-C_6alkyl in the 4-position or -S(=O)$_p$-halogen-C_1-C_6alkyl in the 4-position, with the proviso, that one of the substituents R_{3b} is -S(=O)$_p$-C_1-C_6alkyl or -S(=O)$_p$-halogen-C_1-C_6alkyl; and

R_2 is R_{2a} or R_{2b};

and in the groups (A), (B) and (C), where appropriate,

R_{2a} is -C_1-C_6alkyl-$NR_{11}R_{12}$, -C(=X)-R_{7a}, -COC_9-C_{20}alkyl, -CH_2O(C=O)C_1-C_6alkyl, -C_1-C_6alkyl-O-C_1-C_6alkyl-O-C_1-C_6alkyl, -CH_2O(C=O)C_2-C_6 alkenyl, -CH_2O(C=O)C_2-C_6alkinyl, -C(=S)OC_2-C_6alkenyl, -C(=S)OC_2-C_6alkinyl, -C(=S)SC_1-C_6alkyl, -C(=S)SC_2-C_6alkenyl, -C(=S)SC_2-C_6alkinyl, -C(=O)SC_1-C_6alkyl, -C(=O)SC_2-C_6alkenyl, -C(=O)SC_2-C_6alkinyl, -C(=S)$NR_{11}R_{12}$, -C(=O)$NR_{10}OR_{13}$, -CH_2OC_2-C_6alkenyl, -CH_2OC_2-C_6alkinyl, -CH_2OC_2-C_6haloalkenyl or -CH_2OC_2-C_6haloalkinyl;

R_{2b} is hydrogen, -OH, C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_6cycloalkyl, C_3-C_6alkenyl, C_3-C_6alkinyl, halogen-C_1-C_6alkyl, halogen-C_3-C_6alkenyl, halogen-C_3-C_6alkinyl, benzyl or benzoyl, wherein the benzyl or benzoyl radical is substituted in the aromatic ring independently of one another once to three times by substituents selected from the group consisting of halogen, -CN, NO_2, C_1-C_6alkyl, C_1-C_6alkoxy, halogen-C_1-C_6alkyl and halogen-C_1-C_6alkoxy; C_1-C_6alkoxy-C_1-C_6alkyl, cyano-C_1-C_6alkyl, -C(=X)-R_{7a}, -C(=X)-R_{7b}, -OC(=O)-R_{7a}, -C(=O)-C(=O)-R_{7a}, -OC(=O)-R_{7b}, -C(=O)-C(=O)-R_{7b}, -S(=O)$_p$N(R_6)$_2$ (wherein the two R_6 substituents are independent of one another); cyano, -C_1-C_6alkyl-

$N(R_5)$-C(=O)-R_8, -C_1-C_6alkyl-S-C(=S)-R_8, -C_1-C_6alkyl-$S(=O)_p$-R_9, -$S(=O)_p$-R_9, or -CH_2-$N(R_{10})$-SO_2-R_9;

X is O or S;

p is 0, 1 or 2;

R_5 is independently H or C_1-C_8alkyl;

R_6 is independently H, C_1-C_8alkyl, C_3-C_6cycloalkyl, phenyl or benzyl, wherein the phenyl or benzyl group is substituted in the aromatic ring where appropriate independently of one another once to three times with substituents selected from the group consisting of halogen, -CN, NO_2, C_1-C_6alkyl, C_1-C_4alkoxy, halogen-C_1-C_6alkyl and halogen-C_1-C_6alkoxy; or two alkyl radicals R_6, together with the nitrogen atom to which they are bonded, form a five to seven-membered ring, wherein a CH_2 group, where appropriate, is substituted by a heteroatom selected from the group consisting of O and S, or is substituted by NH, and wherein the five to seven-membered ring, where appropriate, is substituted once or twice with C_1-C_4alkyl;

R_{7a} is C_1-C_6alkoxy-C_1-C_6alkyl, $CH_2CH_2CF_2Cl$, C_1-C_6alkylthio-C_1-C_6alkyl, acyloxy-C_1-C_6alkyl, halogen-C_3-C_6cycloalkyl, C_3-C_6cycloalkyl-C_1-C_6alkyl, halogen-C_3-C_6-cycloalkyl-C_1-C_6alkyl, aryloxy-C_1-C_6alkyl; or phenyl, benzyl, phenoxy or aryloxy-C_1-C_6alkyl, which are substituted with 1 to 3 substituents selected form the group consisting of halogen, nitro, cyano, C_1-C_4-alkyl, halogen-C_1-C_4-alkyl and halogen-C_1-C_4-alkoxy;

R_{7b} is H, C_1-C_8alkyl, C_2-C_8alkenyl, halo-C_1-C_8alkyl, halo-C_2-C_8alkenyl, C_1-C_8alkoxy, halo-C_1-C_8alkoxy, C_3-C_6cycloalkyl, phenyl, benzyl, phenoxy, benzyloxy or -$N(R_6)_2$ (in which the two R_6 are independent of one another);

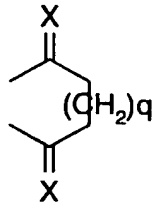
R_8 is C_1-C_8alkyl, C_1-C_8alkoxy, halogen-C_1-C_8alkyl, halogen-C_1-C_8alkoxy, C_1-C_8alkylthio, phenyl, benzyl or -$N(R_6)_2$ (wherein the two R_6 radicals are independent of one another);

R_9 is C_1-C_6alkyl, halogen-C_1-C_4alkyl or aryl, which is unsubstituted or substituted once to three times, independently of one another, with subsituents selected from the group consisting of C_1-C_6alkyl, C_2-C_4alkenyl, C_2-C_4alkinyl, C_1-C_4alkoxy, halogen, cyano, halogen-C_1-C_4alkyl, halogen-C_2-C_4alkenyl, halogen-C_2-C_4alkinyl, halogen-C_1-C_4alkoxy and nitro;

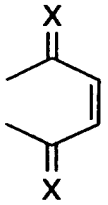
R_{10} is H, C_1-C_6alkyl, C_3-C_6cycloalkyl, phenyl oder benzyl, wherein the phenyl and benzyl radicals are unsubstituted or substituted in the aromatic ring once to three times independently of one another with substituents selected from the group consisting of

C_1-C_4alkyl, C_1-C_4alkoxy, halogen, cyano, halogen-C_1-C_4alkyl, halogen-C_1-C_4alkoxy and nitro;

R_{11} and R_{12} are independently of one another H, C_1-C_6 alkyl, phenyl, -COC_1-C_6alkyl, -COC_1-C_6haloalkyl, -COphenyl, or together form a five or six-member saturated or unsaturated ring, wherein if appropriate one or more, especially one, of the CH- or CH_2-groups is or are substituted by a heteroatom selected from the group consisting of O, N and S, and wherein the five or six-membered ring if appropriate is independently of each other substituted with 1 to 3 substituents selected from the group consisting of halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4haloalkoxy, NO_2 and CN; or the two substituents R_{11} and R_{12} together form a ring



or



;

q is 2 or 3; and

R_{13} is H, C_1-C_6alkyl, C_2-C_6alkenyl, C_2-C_6alkinyl;

R_{14} is hydrogen, C_1-C_6alkyl, halogen-C_3-C_6alkyl, C_1-C_6alkoxy, halogen-C_1-C_6alkoxy, C_2-C_6alkenyloxy, -CHO, -C(=O)-C_1-C_6alkyl, -C(=O)-halogen-C_1-C_6alkyl, -C(=O)-OC_1-C_6alkyl, -C(=O)-O-halogen-C_1-C_6alkyl, -CN, -NO_2, -$S(=O)_2N(R_6)_2$ (wherein the two R_6 substituents are independent of one another), -$S(=O)_p$-C_1-C_6alkyl, -$S(=O)_p$-halogen-C_1-C_6alkyl, -O-$S(=O)_p$-C_1-C_6alkyl, -O-$S(=O)_p$-halogen-C_1-C_6alkyl, phenyl, benzyl, or benzyloxy wherein each of the phenyl, benzyl, or benzyloxy substituents is unsubstituted or substituted in the aromatic ring independently of one another once to five times with substituents selected from the group consisting of halogen, cyano, NO_2, C_1-C_6alkyl, halogen-C_1-C_6alkyl, C_1-C_6alkoxy and halogen-C_1-C_6alkoxy; and

R_{15} is hydrogen, C_1-C_6alkyl or halogen-C_1-C_6alkyl;

and, if appropriate, to the possible E/Z isomers, E/Z isomer mixtures and/or tautomers, in each case in free form or in the form of a salt, to a method for the preparation and use of these compounds, E/Z isomers and tautomers, pesticides, whose active ingredient is selected from these compounds, E/Z isomers and tautomers, and to a method for the preparation and use of these compositions, intermediate products, in free form or in the form of a salt, for the preparation of these compounds, and where appropriate their

tautomers, in free form or in the form of a salt, and to a method for the preparation and use of these intermediate products and their tautomers.

2. A compound of formula (I) according to claim 1 in free form.

3. A compound of formula (I) according to claim 1, wherein A_1 and A_2 are phenyl.

4. A compound of formula (I) according to claims 1 to 3 wherein

R_{2a} is -C_1-C_6alkyl-$NR_{11}R_{12}$, -COC_9-C_{20}alkyl, -C_1-C_6alkyl-O-C_1-C_6alkyl-O-C_1-C_6alkyl, -$CH_2O(C=O)C_1$-C_6alkyl, -$CH_2O(C=O)C_2$-C_6alkenyl, -$CH_2O(C=O)C_2$-C_6alkinyl, -$C(=S)OC_2$-C_6alkenyl, -$C(=S)OC_2$-C_6alkinyl, -$C(=S)SC_1$-C_6alkyl, -$C(=S)SC_2$-C_6alkenyl, -$C(=S)SC_2$-C_6alkinyl, -$C(=O)SC_1$-C_6alkyl, -$C(=O)SC_2$-C_6alkenyl, -$C(=O)SC_2$-C_6alkinyl, -$C(=S)NR_{11}R_{12}$, -$C(=O)NR_{10}OR_{13}$, -CH_2OC_2-C_6alkenyl, -CH_2OC_2-C_6alkinyl, -CH_2OC_2-C_6haloalkenyl or -CH_2OC_2-C_6haloalkinyl.

5. A compound of formula (I) according to claims 1 to 4, wherein n_1 is 2, 3, or 4 and n_2 is 1 or 2.

6. A pesticidal composition comprising at least one compound of formula (I) according to claim 1 as active ingredient, either in free form or in the form of an agrochemically acceptable salt, and at least one adjuvant.

7. A method for the control of pests comprising applying a composition of claim 6 to pests or their habitat.

8. A method according to claim 7 for the control of insects and members of the order acarina.

9. A method for preparing a composition of claim 6 which contains at least one adjuvant and comprises the intimate mixing and/or grinding of the active ingredient with the adjuvant(s).

10. The use of a compound of formula (I) according to claim 1, either in free form or in the form of an agrochemically acceptable salt, for preparing a composition of claim 6.

11. The use of a composition of claim 6 for the control of pests.

12. The use of claim 11 for the protection of plant propagation material.

13. A method of claim 7 for protecting plant propagation material, comprising treatment of said propagation material or of the locus for cultivation of said propagation material.

14. Plant propagation material which is treated according to the method described in claim 13.

INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/EP 99/00363

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C07C255/66 C07C317/32 C07C323/48 C07D307/32 C07D333/12
C07D213/53 A01N37/34 A01N41/10 A01N43/08 A01N43/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C07C C07D A01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SCHULZE W ET AL: "STICKSTOFFLOST-VERBINDUNGEN AUS N.N-BIS-BETA-CHLOR-AETHYL-P-TRI- CYANVINYL-ANILIN UND AMINEN, HYDRAZINEN UND AMIDINEN" CHEMISCHE BERICHTE, vol. 99, no. 11, 1 January 1966, pages 3492-3502, XP000575951 see page 3494, reaction scheme at the bottom of the page, compound 19; page 3499, lines 29 - 33 --- -/--	1-3

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 June 1999	30/06/1999

Name and mailing address of the ISA	Authorized officer
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1

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INTERNATIONAL SEARCH REPORT

Inte Jonal Application No
PCT/EP 99/00363

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category '	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CHEMICAL ABSTRACTS, vol. 106, no. 19, 11 May 1987 Columbus, Ohio, US; abstract no. 156385x, ZAGHLOUL EL SHAHAT KANDEEL ET AL.: "Nitriles in Heterocyclic Synthesis: New Synthesis of Pyridine and Pyrido'2,3-d!pyridazine Derivatives" page 683; column 1; XP002106159 see abstract & HETEROCYCLES, vol. 24, no. 9, 1986, pages 2455-2461, ---	1,2
P,X	WO 98 03475 A (NOVARTIS) 29 January 1998 see page 36 - page 37; claims; tables 3,4,6-29 ---	1,6, 10-14
A	EP 0 500 111 A (ISHIHARA SANGYO KAISHA) 26 August 1992 see claims; examples ---	1,6, 10-14
A	EP 0 581 725 A (CIBA-GEIGY) 2 February 1994 see claims; examples -----	1,6, 10-14

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte ional Application No
PCT/EP 99/00363

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